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THE AUTOMOBILE

WEEKLY — NEW YORK — SATURDAY, OCTOBER 24, 1903 — CHICAGO — 10 CENTS

Finish and Results of Endurance Run.

STAFF CORRESPONDENCE FROM PITTSBURG OF OCTOBER 16.

THE endurance run of 1903 is finished and there is no one who is not heartily glad of the fact. All that remains now is for the examination of the machines to be completed to-day, finally, the important lessons learned during the last ten days to be applied to future constructions.

Gratification over the successful conclusion of the run, through which the unexpectedly large total of twenty-five out of thirty-four starters has been brought, is evident and general. The apprehension felt at Binghamton and Bath has been dissipated and the sentiment that similar events in the future would be only a needless expense and waste of energy, or that if held they should be run from a central point out and back each day, as in England, has been superseded by an enthusiasm bred in the hour of success that now contemplates an even longer cross-country run next year—an endurance run with New York as the starting place and the Louisiana Purchase

TYPICAL SCENE AT THE EARLY MORNING DEPARTURES IN THE ENDURANCE RUN.—Gardiner Starting from Erie.

the cars to be shipped or driven under their own power back to the factories, the participants to return home, the results to be analyzed, and compiled by the National Association, rest to be secured, and,

Exposition in St. Louis as the objective point.

As direct results of this run we may expect a great improvement in the matter of protection of all working parts of the vehicle and of passengers as well against rain and dirt; bearings, gears, steering mechanism and central lever parts will be made water and dust proof, springs will be lengthened and improved in flexibility, tire shoes wll be more accurately fitted to the rims, fenders will be more universally fitted, axles and steering knuckles especially will be made stronger, wheelbases lengthened in some cases, lamps and brackets improved and storm aprons and boots of the best quality provided.

The 125 men in the endurance run party left no orders for early calls and rose late this morning They have made their headquarters during the day at Banker Bros. garage, where those who had to remain to attend to the shipping of the

BURNING OF THE FRANKLIN CAR.

cars swapped reminiscences of the run. The afternoon and evening trains carried away most of the passengers and observers. The opinion was universal that a great deal of good had been accomplished by the event and next year will see a larger number of entrants and an even greater success. The demonstration of the peculiar suitability of the American machines for American roads was especially pleasing, and with many handshakes the participants separated to reunite next at the New York show in January.

A number of remarkable runs were made by drivers of belated cars in the effort to finish with the leaders at Pittsburg. Perhaps the most noteworthy was the run of Edward Collier in Rambler 17. Collier made four controls in one continuous run—Bath to Buffalo, Buffalo to Erie, Erie to Cleveland and Cleveland to Youngstown—a total distance of 389 1-2 miles in twenty-five hours. He slept only two hours of the journey but lost some time seeking gasoline and oil. At one point his car dropped through a bridge and frequently he made long detours that do not appear in the mileage given. Neither his machine nor the tires gave him the slightest trouble in the long run.

A. L. Riker, in the Locomobile, drove from Campbell to Erie, through Bath and Buffalo, 235 miles, in twenty-one hours thirty minutes. He stopped at Buffalo to give Mrs. Riker a needed rest.

One of the most exhausting runs was made by D. R. Dorris in the St. Louis tonneau. Mr. Dorris came through from Corning to Cleveland, 340 miles, in forty-eight hours to close with the leaders and finished at the Hollenden Hotel so exhausted that he had to be carried into the hotel and up to bed. Another driver had to take his place toward the end of the run and Dorris curled up on the floor of the tonneau and took all its jars and jolts.

W.H.Bex, in Franklin 26, made the run through the storm from Binghamton to Buffalo, 230 miles, in thirty-nine hours, and John Wilkinson, in Franklin 27, came straight through from Afton to Buffalo, 262 miles, through the storms in forty-two hours. At one place Bex ran into an open bridge, washed out by the storm, and was hauled from his position by horses.

Some Statistic Data of the Run.

The following table shows the times made for the entire trip of 797 miles and the times for the latter part of the journey from Buffalo to Pittsburg over 334 1-2 miles of fairly good roads. The cars are given in the order of merit as announced by the N. A. A. M. committee.

Name	No.	Total Time	Time Buffalo-Pittsburg
Toledo.....	10	62:54	25:04
Pierce.....	15	66:04	29:39
White.....	6	65:54	19:12
Arrow.....	14	73:45	29:50
White.....	5	59:32	17:44
Rambler....	18	73:57	20:24
Packard.....	16	62:55	30:55
Columbia....	2	54:19	19:27
Stearns.....	35	62:11	18:45

Of the cars that started in Class A, retailing at $1,000 or less, one finished among the first nine—Rambler 18, driven by Arthur Gardiner. Five of the others finished. Olds 39, with Roberts driving, was the second car in this class; Rambler 17 with Edward Collier, third; Olds 41, with L. L. Whitman, driving, fourth, and Fredonia 20, with F. L. Thomas driving, fifth.

Nine cars finished in Class B, $1,000 to $1,500. Only one of the number, Piecer 15, made all controls, driven by Percy Pierce. Six other cars of this class were among the finishers, however. They were in order of finish: Franklin 26, W. H. Bex driving; Franklin 27, John Wilkinson driving; St. Louis 42, D. R. Dorris driving; Haynes-Apperson 30, Frank Nutt driving; Knox No. 23, H. M. Davis driving, and Fredonia 19, C. F. Gaither driving.

Two cars started in Class C, $1,500 to $2,000, and one finished. It was the two-cylinder Toledo No. 10, which made the best score of all, losing but 13 points.

There were eight starters in Class D, $2,000 to $2,500, and seven finished, four of them among the leading nine cars which made all controls. They were White steamer No. 6, P. H. Deming driving; Pierce Arrow No. 14, Charles Sheepy driving; White No. 5, Webb Jay, and Packard Old Pacific, E. T. Fetch driving. In the second division were Knox 24, J. E. Cowan; Knox 25, F.H. Fowler, and Haynes-Apperson 31, H. W. Lanterman driving.

F. B. Stearns, Stearns No. 35, was alone in Class E, $2,501 to $3,000.

In Class G, above $3,500, Columbia No. 2, with Bert Holcomb driving, was the only car to finish in the first nine, but three others completed the run. They were Locomobile, A. L. Riker; Toledo No 9, M. W. Winters, and Columbia 3, L. Duffie, driver.

There were 10 1-2 sets of Diamond tires on cars that finished out of 15 1-2 on cars that started. There were eight sets of G & J tires, 6 1-2 sets of Goodrich and one of Fisk. In the nine cars that made every control there were 4 sets of G & J tires, 3 1-2 sets of Goodrich, 1 1-2 sets of Diamond. Of the total points scored against the nine leading machines, only 907 of 3,638 were due to tires, or less than 25 per cent. Considering the condition of the roads, the showing was a grand one for tires.

Of the thirty-four cars that started, thirty-three reached Pine Hill, the Holley 37 breaking an axle the first day.

Thirty-three cars left Pine Hill. Phelps No. 13 stripped its low speed gear thirty miles out. Franklin No. 28 caught fire near Delhi and Haynes-Apperson 31 met with an accident before reaching Binghamton and never appeared again. Northern 34 stripped its transmission gear six miles from Unadilla. This left twenty-nine cars which reached Binghamton.

On the third day White No. 4 burst a feed-pipe at Union and was ordered shipped to Binghamton. Dan Wurgis, driver of Olds No. 40, left his car at Elmira owing to the discouraging conditions. He had ignition troubles. Twenty-seven cars reached Bath, Buffalo and Cleveland. At Cleveland the two Northern cars, Nos. 32

and 33, were abandoned by their drivers. This reduced the number to the twenty-five that finished.

Of the nine abandoned cars, only one could not have finished the run. That was Franklin 28 which burned. The others might have come through by overcoming their troubles as did others if the railroads could have gotten new parts to them in time.

EXPERIENCE OF L. J. PHELPS WITH CAR NO. 13—NO AXLE BROKEN.

The following communication from Mr. Phelps throws interesting light on the hardships endured in the contest :

Editor THE AUTOMOBILE:

Sir:—In your issue of the 17th giving an account of the Endurance Run you state that running under the unlucky number 13 I was unfortunate enough to break a rear axle, which put me permanently out of the contest. This is an error. Not the 13 part of it, for it is true that I was lucky enough to draw that unlucky number, and I sometimes think that I hoodooed the whole run by accepting that number and joining the procession. But an axle, either front or rear, has never yet been broken on one of our cars. What did happen was the stripping of our slow speed gear which we had been working to the limit for over three hours under road and weather conditions which were enough to drive any self-respecting ox team to cover. It was not a serious matter, and had I possessed one-half the pluck of some of the younger contestants it would have been replaced and we would have proceeded with but a few hours' delay. But after plugging about in the mud and water ankle deep for an hour with rivers of water raging down my spinal column, overflowing my ribs and boiling in cataracts from my shoe tops I decided that I had had enough of it and, abandoning the car by the roadside, sought shelter in a near-by farmhouse. There we borrowed dry clothes from the farmers and hung our drenched garments about the kitchen stove to dry. We remained in that hospitable retreat for two days and would have been there yet had the storm not ceased. It was the worst flood I ever saw. The rain did not come in drops like an ordinary shower, but in streams, as though the whole heavens had been turned into a shower bath with a quarter inch hole in every square inch of the surface, through which the water poured. To make our misery complete it caught us in the very worst part of the whole trip. Right in the heart of the Catskill mountains. As I wrote my wife from Delhi, when I reached there Saturday night, I was a wiser man, having had experience such as I had never met with before and prayed that I might never be subjected to again.

L. J. PHELPS, No. 13.

Stoneham, Mass., Oct. 17.

Youngstown to Pittsburg—Last Day's Run Gathering the Stragglers.

Rain Again Renders Traveling Unsafe on Last Day—Innumerable Hills Surmounted—Triumphant Entry Into City of Pittsburg.

Staff Correspondence.

PITTSBURG, Oct. 16.—The final day had come and 125 interested people arose from their beds thoroughly weary but happy in the knowledge that one more day would end the contest. Before them were hills, which the careful and truthful compiler of the "red book" had not failed to record. It was "up long, 15 to 17 per cent.," "up winding, stony 15 to 20 per cent." from start to finish. A heavy fog, intermingled with smoke from the steel mills and indications of rain, cast a discouraging chill over the first glow of gladness, and many a driver wondered whether or not he would be a finisher after all his struggles. The drivers were tired; some of their cars were in none too good condition, and the day's struggle to be one of the hardest of the entire run.

All were up at 5.30 and ready to start at 6.30. The cars were out on the street and lined up for the start at 7.45 A. M. Propositions to start the last day's run of less than seventy miles at 8 o'clock had been rejected. Some would have started at break of day, and it would have been better so, as it later transpired. Promptly at 7 the first car started over the long bridge. It was White No. 5, with Webb Jay at the wheel.

Immediately after him Columbia 2, with Bert Holcomb driving, and two minutes later F. B. Stearns went away in the wake of Toledo 9, with M. W. Winters. Then followed White 6, with Paul Deming, and the final struggle of the big cars was on. Every driver was out to take all the risks.

THE START FROM DUNN'S LIVERY AT ERIE, OCT. 13.

Following in the wake of the big cars over the bridge came the smaller machines —Frank Nutt in Haynes-Apperson 30, Arthur Gardiner in Rambler 18, W. H. Bex in Franklin 26, John Wilkinson in Franklin 27, at one minute intervals—and the day's competition in the second section was on. Gardiner, leader of the light cars throughout the trip, was determined to finish first among machines of his class.

Tom Fetch, with Old Pacific, created a stir in the crowd when he went away, for Fetch came from Warren, Ohio, and is the hero of Ohioans for having crossed the

continent. After Fetch came Toledo 10, with George Soules driving.

Then came A. L. Riker and Mrs. Riker in Locomobile 36, intent on overtaking the leaders before Pittsburg was reached.

Soon it began to rain and the roads became so greasy that the hills were all but insurmountable.

By 7.15 Eastern or 8.15 Central standard time, nineteen machines had taken their departure. Later in the day there arrived and departed the two Fredonias, the two Knox cars 24 and 25, Haynes-Apperson 31 and Columbia 3, all heavily mud plastered but with drivers determined to finish.

Soon after starting Toledo 10, carrying as a passenger C. H. Gillette, superintendent of observers, broke a spring. Operator Winters at once returned to the starting point, where the spring was repaired and a new spring secured. The repaired spring broke again on one of the dangerous hills, causing another delay.

Racing Brings Disaster to Stearns.

The speed competition between the big cars was renewed promptly after the start. Frank Stearns, driving recklessly, passed the others and took the lead. The Clevelander was out for a record run, apparently without regard to the number of reliability points scored or lost. Near Economy he struck a brewery wagon and landed his big car in a pipe line ditch. All jumped out and with the aid of the laborers the car was lifted out. The steering gear was injured. Not daunted by the accident, Stearns continued to drive at top speed and nearing Avalon he struck another wagon. The driver of this had abandoned the rig when the pilot cars came along. At this time Stearns was close behind the pilots. Not content, he continued on. Dangerous 15 to 20 per cent. grades were taken on the high speed. When the second wagon was struck E. D. Roeser of the *Pittsburg Press* was thrown out as the rebounding car struck a telegraph pole. Jim Batton, the mechanic, who rode the entire trip in the bottom of the car, narrowly escaped injury. The steering gear and springs were broken and the wheels spread in this accident, but after hasty repairs the car was worked up the hill and went on. On the high bridge with the car in its condition there was no surprise when a gravel wagon was "side swiped." That defeated the aspirations of Mr. Stearns to reach Allegheny first, for one and three-quarter hours were spent right there making needed repairs. Mr. Stearns was so disgusted with his experience that he declared he will start next Tuesday and return over the entire course of the endurance run, making two controls a day, that is, sleeping at Cleveland, Buffalo and Binghamton.

Webb Jay in White 5 entered Allegheny at 11.55, twenty-seven minutes ahead of Holcomb in Columbia 2. It was the fourth time on the run Jay had arrived first at a control. Paul Deming in White No. 6 arrived at 12.34, twelve minutes back of Holcomb, and W. H. Bex in Franklin 26 caused general surprise when he came in only eight minutes behind the White and twelve minutes ahead of Gardiner in Rambler 18.

Met by Pittsburg Club Members.

These cars formed the advance guard to arrive within the hour limit. They were met at Allegheny by the reception committee of the Pittsburg Automobile Club in several cars and by press representatives of Pittsburg in another car. The Pittsburg committee was composed of W. Linford Smith, secretary of the Pittsburg Automobile Club, Reuben Muller, Jr., J. Francis Burke and W. C. Temple. Arthur Banker drove another car and provided accommodations for the press in a third car labeled "Members Pittsburg Press." The procession wended its way through Allegheny and Pittsburg to Hotel Schenley, and thence to the Banker Brothers Company garage at Baum and Beatty Streets. The cars which had made the run were easily recognized by their muddy condition. Thousands of people blocked traffic by standing ten and twelve deep out into the street, and cheers for the successful arrivals were frequent and prolonged.

The light rain gave way to sunny moments as the contestants entered Pittsburg. The pilot cars were given as general an ovation as the competitors.

The run from Youngstown was the hardest pull of the trip and for those who failed to reach Allegheny for the triumphal entry into Pittsburg it was doubly hard.

Rain fell sufficiently to make the going more slippery on the hills than on that famous second day from Pine Hill to Bath, the memory of which will never be effaced. On the Youngstown-Pittsburg stage of the journey are innumerable hills, ten up grade to one down, and such grades that under the comparatively light rain the wheels slipped constantly and cars frequently came to a standstill. No driver who on a 17 to 20 per cent. grade experienced the falling sensation when his car started to slide backward with the power all on will forget it.

Order of Finish at Pittsburg.

After the arrival of Gardiner at Allegheny there was a long break of nearly an hour. The times of the cars held at Allegheny were taken there and all were credited with 2 o'clock at the finish. Four minutes after 2, John Wilkinson in Franklin 27 came into the garage. He had made the run without accident. At 2.07 the Stearns appeared, having lost one and three-quarter hours by accidents. At 2.17, A. L. Riker in the Locomobile entered. Then came Tom Fetch in "Old Pacific" at 2.22, G. L. Dorris in St. Louis 42 at 2.25, and Frank Nutt in Haynes-Apperson 30 at 2.35. Nutt also reported no accidents. Charles Sheppy, a careful driver, in Arrow 14 was done at 2.48, and H. M. Davis in Knox 23 at 2.51. The Olds 39 came in at 2 58.

George Soules in Toledo 10 finished at 3.15. Soules was delayed on the slippery hills and in driving his engine at full speed smudged a plug, compelling a stop to clean it. It was 3.44 when Percy Pierce and his merry comrades came in with Pierce 15, and 4.12 when Toledo 9 finished. This car returned to Binghamton after starting last Friday to repair a broken spring.

Edward Collier, in Rambler 17, arrived at 4.32. Twenty-seven miles out of Youngstown Collier ran into a woman but did not injure her. She had stepped out of a buggy to hold a fractious horse which threw her in front of the car. Collier and his observer were under a hood and could not get out to help hold the horse.

L. L. Whitman, in his transcontinental Olds, finished at 5.43. Whitman punctured a tire and finished the last fifteen miles with it flat.

It was 7 o'clock when Fredonia 19 finished with C. T. Gaither driving. This completed the list for the night, but other cars were reported coming.

The Stragglers All In.

At 9.41 this morning F. L. Thomas, in Fredonia 20, finished. Mr. Thomas reached Avalon at 11.30 P. M., thirteen miles from the finish and within two miles of the beginning of good road. He had passed through some perilous going and was happy in the thought that it was nearly all over. Then the machine stopped for want of gasoline. Mr. Thomas made a house-to-house canvass and finally found a woman who thought she had two gallons. Her husband made his appearance and cursed the automobilists for disturbing the people at such hours. Mr. Thomas remained by his machine from 11.30 to 8.30, when his man brought gasoline and all his troubles were ended at 9.41.

At 11.31 this morning Knox 24 finished, with J. E. Cowan driving, and Knox 25, with Frank H. Fowler driving, came in at 11.43. The Cowan machine broke down at Painesville Tuesday night, and Mr. Cowan went to Cleveland, secured parts and returned to bring in the machine. No. 24 Knox broke a transmission gear at Franklin and, securing new parts, plugged along apparently out of the contest. Another machine supposedly out of the running was the Haynes-Apperson tonneau which was wholly missing after Pine Hill. Mr. Haynes himself found the machine and drove it night and day to Cleveland, where H. W. Lanterman took it up and came through with it.

Last to finish was Columbia No. 3, with L. Duffie driving. Duffie came in at 4.35 and proudly displayed the high-water mark. He had gone through water in New York State up to the baskets and had survived to reach Pittsburg.

With these twenty-five cars in the garage at Banker Brothers and nine cars only missing of the thirty-four which started, the record is complete and a credit

to American industry and American pluck. Many of the stoutest of heart among Americans doubted if more than five cars would finish, and the total of twenty-five is just five more than the most optimistic predicators imagined would be here to-day.

With the cars safely housed, the work of inspecting the machines was taken up to-day. M. L. Downs, chief weigher and inspector, went carefully over each car point for each minute or portion thereof a car stopped, except for such reasons as were made absolutely necessary to avoid accident, the frightening of horses and similar causes beyond the control of the operator. The rules also provided that the garages should close at midnight and open at 6 A.M. and that cars which had not arrived on time should be penalized 300 points representing the number of minutes garages until many hours after the closing time. Despite all obstacles, nine cars reached all of the garages on time or within a few minutes after the closing hour.

"The information hereinafter given has been obtained from a cursory and purely unofficial examination of the records made by the observers. No official statement will be issued until after the meeting of the

COMPETING CARS DEPARTING FROM ERIE, AT 7 A. M., OCTOBER 13.

The Stearns No. 35.—Frank Stearns Driving. White Steamer.—Paul Deming Driving.

Columbia No. 2.—B. B. Holcomb Driving. Toledo No. 10.—George Soules Driving.

with a corps of assistants. The makers' representatives will remain to ship the cars when released.

The Executive Committee to-day issued the following statement:

"The rules of the endurance run provide that each contestant should be credited at the start with 3,000 points representing approximately the number of minutes required to cover the full distance between New York and Pittsburg, by way of Cleveland, at legal speed, and that from that number there should be deducted one between the closing and reopening of the garage.

"It has been demonstrated that, under ordinary circumstances, practically all of the competing cars would have reached the garages on time. The frightful storm in the Catskills and throughout New York State, which made it impossible for the trains to run and carried away telegraph and telephone communication, resulted in the demolition of bridges and washouts of roadways to such an extent that it was impossible for some of the cars to reach the executive committee of the National Association of Automobile Manufacturers on November 4. The records indicate that the total number of points lost by the nine cars above referred to, despite the extraordinary conditions, barely exceed the total number which it would be possible for a single car to have lost on the journey. The cars which met all of the requirements stated in their apparent order of merit are as follows: No. 10 (Toledo) operated by George Soules; No. 15, (Pierce stanhope) operated by Percy P. Pierce; No. 6,

(White) operated by P. H. Deming; No. 14, (Pierce Arrow) operated by Charles Sheppy No. 5, (White) operated by Webb Jay; No. 18, (Rambler) operated by Arthur Gardiner; No. 16, (Packard) operated by E. T. Fetch; No. 2, (Columbia) operated by B. B. Holcomb; No. 35, (Stearns) operated by F. B. Stearns.

"It is a noteworthy fact that cars Nos. 10, 15 and 14 came through the ordeal without tire troubles. The points lost ranged from 13 for the lowest to 878 for the highest.

"The total number of points lost by the nine cars was 3,558. Of these, 2,552 were due to the cars themselves, 907 to tire trouble and 129 to road construction due to no fault of either the operator or the car. In reaching these totals a number of incidents which are clearly no fault of the vehicles have been omitted, for example, one operator spent ten minutes in a pouring rain at 11 o'clock at night building a bridge before his car could proceed. Others were compelled to make detours of from one to four miles over mountainous roads to avoid washouts. Still others were forced to engage horses to tow their machines from 200 yards to a quarter of a mile in places where the roads varied from two feet to three feet six inches in depth with water. One of the observers taking the precaution to record the high-water mark on the side of his machine, so that there might be no question about the difficulties with which he had to contend.

"No attempt has yet been made to tabulate the records of the fourteen additional cars which, for causes above stated, failed to reach the garages before midnight. In addition to the competing cars, the two pilots, which started daily from half an hour to two hours ahead of the main body, arrived in Pittsburg without a mishap and apparently in as good condition as at the start.

"An examination of the cars is proceeding and a report will be submitted to the management three or four days hence. The record of only 907 points lost through tire trouble is a splendid testimonial to the excellence of the American tires. Not a single foreign tire was used on any car in the run."

CENTRAL ARMORY BUILDING IN CLEVELAND, USED AS OFFICIAL GARAGE, OCT. 13,—TOLEDO NO. 10 ARRIVING.

Notes of the Last Day's Run.

Five representatives who followed the run were Henry Sheldon for the B. F. Goodrich Company and P. W. Hood for the Diamond Rubber Company, by train, and H A. Githens, for G & J tires and Teddy Edwards, for Hartford Rubber Company, by Oldsmobile.

Rambler 17 went through a bridge at 2 o'clock one morning and Operator Collier sat on the back of the seat for three hours until a kindly farmer brought a team and hauled him out.

Whistles of all sorts and loud-sounding calliopes greeted the cars along the route from Youngstown to Pittsburg, where the towns were numerous.

The way the White Sewing Machine Company cared for its drivers at the finish of each day's run was gratifying. Nothing was too good nor too expensive for them.

George Soules, driver of Toledo No. 10, which captured first honors with a loss of only 13 points, is a careful operator. He nurses his car along and slows down to avoid every possible bump.

Jim Patton, mechanic for F. B. Stearns, rode the entire 797 miles on the floor of the car with his feet on the steps and sustained innumerable bruises.

The Franklin car which burned had an extremely narrow tread and could hardly have finished anyway in the rutty condition of the roads.

Representatives of the H. H. Franklin Company were present at every control to care for the drivers of Franklin cars in the best possible manner.

Franklin 26, driven by W. H. Bex, probably had fewer replacements than any other car. A dynamo, a battery and one oiler wire all that were rqeuired and the tires were untouched throughout the entire journey.

Tom Fetch, who drove "Old Pacific" across the continent and through this run, has been signed by Frank Stearns to drive a Stearns.

Thomas B. Jeffrey and Mrs. Jeffrey came East hurriedly in search of their son Harold, who was an observer. Harold was on one of the "missing" cars for several days.

Mrs. Riker was presented with a huge bouquet of roses at the close of her 797-mile journey at Hotel Schenley by participants in the run who admired her pluck and *con homie*.

"It costs money to secure records," said Mr. J. Budlong of the Electric Vehicle Company, speaking of the Chicago-New York record made by Holcomb. "yet it pays. We had a car which was untested and unknown, but I guess it is known now. The Chicago round trip and the endurance test without readjustment prove its true value."

The Pittsburg *Press* said "Twenty cars in a fierce and (w)reckless run." But the run was not wreckless, although some of the drivers were reckless.

A Cleveland paper spoke of the "twenty-two" ton Stearns in the afternoon edition, and later reduced this figure to twenty tons for the morning edition. The Associated Press sent it broadcast that way.

Three Knox cars started and three came through, the Knox Company being the only one to bring through three competing cars.

THEATER PARTY AND SMOKER FOR CONTESTANTS IN CITY OF PITTSBURG.

After their long and arduous trip the 125 men and Mrs. Riker, who took part in the run thoroughly enjoyed the entertainment provided by the Automobile Club of Pittsburg, which purchased for Thursday evening the entire lower floor of the Avenue Theater, which was packed, to witness a variety performance. Joe Flynn, a comedian, sung a song composed by "Col. Bill Elkins," "Maj. Reubin Miller," "Adjutant George Flynn" and "Gen. S. A. Miles," entitled "On Good Old Schedule Time," reviewing the experiences on the run. The words and music were put together by "Mechanic 15," who spent three days on the job and broke two monkeywrenches, a sledge hammer and small screwdriver.

Mr. Flynn sang the main verses and the automobilists joined heartily in the chorus, copies of the song having been passed around. The audience cheered the novelty heartily.

Immediately after the theater party the crowd crossed the street to Hotel Henry, where several hours were spent with refreshments, cigars and speeches. James Francis Burke, candidate for Congressman, acting as toastmaster, welcomed the participants to the Imperial City, saying, in part: "The greatest achievement of modern times has just drawn to a close and a successful one. I congratulate all of you."

Speakers followed one another rapidly and music by a negro quartet served to enliven the occasion. Among those who spoke were W. C. Temple, Windsor T. White and Fred Nickerson, driver of the Arrow pilot car. Mr. Nickerson said that when he demanded to know from Secretary Unwin where some of the "concrete" roads were as specified in the road book the Secretary replied that he guessed they were turned upside down. Messrs. Henley, Porter, and Tom Fetch, A. L. Riker, J. C. Kerrison, Geo. H. Lowe, Linford Smith and Mr. Clifton followed. Charles Clifton said that the present run had proved the superiority beyond doubt of American machines on American roads. "I believe from my heart," he said, "that American machines as they have shown up in the last eight days are the best in the world, bar none, and I propose a toast to the men who made them, the men who drove them, and to those who observed them."

Expressions on Run by Makers of Cars.

Milton J. Budlong, president of the N. A. A. M., saw the finish at Pittsburg of the first annual endurance test of his organization. He pronounced himself delighted with its successful conclusion after all the difficulties and hardships encountered. He spoke enthusiastically of an endurance run for 1904. "We shall have one," said President Budlong, "and it will be the greatest test of endurance ever undertaken. I would not be surprised if St. Louis were made our destination, owing to the World's Fair. I believe that on such a run there would be hundreds in line instead of a score and a half. Every maker would want representation on such a run, for it would be the greatest possible advertisement for automobiling in general and each maker more particularly who landed a car on time at the Fair.

"The present run has been of the greatest benefit to the trade. Our American cars have been demonstrated to be the only cars for American roads under any and all conditions. Every phase of weather has been encountered, as well as every imaginable kind of road, good, bad and indifferent. As it happened, the test proved

PHOTOS SHOWING DESCENT WITH DANGEROUS FORK NEAR CHAGRIN FALLS, 18 MILES OUT OF CLEVELAND.

Columbia 2,—B. B. Holcomb Driving. "Old Pac"—Tom Fetch Driving.
White 5,—Webb Jay Driving Bad Fork in Road, Confetti Indicating Right Turn.

extraordinarily hard on machines and men. It seemed unfortunate, but was best after all, and for the general good.

"I shall suggest that another test be held earlier, when the chances of any such trying weather as was experienced on this run will not be so great. Under the circumstances, the finishing of twenty-five out of thirty-four cars, and the fact that few if any cars were totally disabled, is a record that could not be surpassed. Had those who withdrew early in the test, under circumstances hardly so discouraging as those met by others whose pluck enabled them to succeed, but continued to the finish we should have had an even prouder record.

"There is little probability of future tests being abandoned, for every maker in the run has been advertised by this contest in a way and to an extent not to be had in any other way. We have demonstrated to the world that American cars are for American roads and should be proud of our success."

T. B. Jeffery Talks.

"Proud? Yes, I am proud of the Rambler car, proud of American cars in general and proud of our American drivers who are plucky beyond compare," said Thos. B. Jeffery, of Kenosha. Mr. Jeffery had two cars in the run, No. 18, with Arthur Gardiner driving, and No. 17, with Edward Collier at the wheel. Gardiner came through among the fortunate leading nine and with his single-cylinder car held a position among the big cars for days. He made an almost perfect run and, barring misfortunes due entirely to the roads and his tires, would have had as few points against him as the Toledo. Collier got mired in the mud and was delayed a long time by going through a bridge floor that had been washed away by the flood. A mountainous detour landed him at Bath and from there he made a continuous night and day run through Buffalo, Erie and Cleveland to Youngstown, where he caught the main body after driving 340 miles in twenty-five hours.

"The records of Gardiner and Collier are hardly equalled on the run," said Mr. Jeffery. "Collier's was both the longest and the fastest continuous run on the trip. Observers who rode with Gardiner tell me that their trip on the Rambler was the easiest and most enjoyable of the trip. The Rambler was the only car in Class A to finish on schedule. I believe in these tests. I did have an idea that runs in future should be from a central point out and back each day, but in view of the World's Fair at St. Louis, I guess that would be an advisable destination."

Pleased with Pierce Showing.

Charles Clifton of the Geo. N. Pierce Company was highly pleased by the success of the Pierce Arrow, 14 driven by Charles Sheppy, Pierce 15 driven by Percy Pierce and the Arrow pilot car driven by Fred Nickerson.

"Yes, we have been most successful," he said, "and I am proud of it. Our cars and our boys have come through with flying colors. The boys, I am told, held out a helping hand to all. That was right. I told them to get the cars through without racing and to do as they would be done by—lend a helping hand wherever possible and make friends. The run has certainly proved American cars to be best for American roads. The pluck and perseverance of American drivers has also been put to the test and not found wanting, either."

Windsor White Voices Regret.

Windsor T. White, of the White Sewing Machine Company, drove the White pilot car. Two competing White cars came through with flying colors, while Augustus Post, in a third White car, came all the way through as an outsider and will return over the road the shortest way to New York. A third competing car was shipped from Union to Binghamton.

"I am sorry now, said Mr. White, "that I gave George Waite instructions to ship the car. Under the circumstances, he might have made repairs and come on. But there was every indication at Bath that a very small percentage of the cars would finish, and I ordered No. 4 home. We are proud of the White and still prouder of the American cars in general. The achievement of bringing twenty-five out of thirty-four competitors through and twenty-seven of thirty-six when the pilot cars are considered, is one which places American cars to the fore on American roads. Imported cars will not be so fashionable hereafter.

RIDE WITH THE RIKERS—WOMAN'S VIEWS ON AUTOMOBILING.

Through rain and cold wind, over mountains and through mud that was sometimes heavy and often as slippery as grease, along narrow roads between precipices dropping fifty yards to the river below on one side and the canal on the other, by day and by night, A. L. Riker drove 797 miles accompanied by his wife. Mrs. Riker never complained; in fact, to use the expression of President Roosevelt, she was "de-light-ed" with the trip. To her it was all novel and interesting, to her a wonderful thing. She talked entertainingly to The Automobile man *en route* from Erie to Cleveland while sailing along at twenty miles an hour in the dark. The roads were rough and full of ruts, the darkness was intense and only one light showed the way. Mr. Riker held the wheel, and that he was interested in his wife's conversation was shown by an occasional word from him. The scribe sat in the tonneau and at frequent intervals was pitched upward into space as the car took a thank-you-ma'am, so that connected conversation was impossible.

It was while racing an electric car from Painesville to the limits of Cleveland that Mrs. Riker said, "O, isn't this glorious? Do you know, I just think this is fine. Afraid? No, why should I be? The car is true and tried and Mr. Riker is driving. My, did that hurt you?" The car had struck a hole and the scribe took a shoot skyward and a prompt descent.

Mrs. Riker occupied the front seat beside her husband, noting the directions and looking for arrows and confetti. The observer with Riker had a seat in the tonneau. That is to say, there is a seat for him if he is able to keep it.

Assured that the writer was still present, Mrs. Riker continued: "This is such fun. I occupied the tonneau once. It was a new experience. Actually, it kept me busy, you know, just trying to devise ways to keep my seat and then to execute them."

The reporter made frantic efforts to hold on to something, but failed, and when a stretch of good road came again there was a sigh of relief from Mrs. Riker, who had gripped her seat and wished, perhaps, that she had a steering wheel to hold on to.

"Mr. Riker does love to drive fast," she said, "and I don't care. He won't jeopardize his own life, and I am as safe as Mr. Riker, anyway. It is glorious, I think, to fly through the country night or day at railroad speed over all sorts of roads."

With teeth chattering and muscles aching, the correspondent agreed with Mrs. Riker, just as the car ran off good going and onto a plank road. The automobile had been following an electric car mile after mile to get the benefit of its brilliant light on the road.

The correspondent and a friend in the tonneau were studying road directions in the red book, the friend holding one of the dash lamps, when suddenly, with a lunge, the car dropped to the hubs in a hole. Everything in the tonneau shot upward, including the passengers, the leather seat cushion and a screwdriver, wrench and spare bolt that had been placed back of the cushion. The descent was as painful as it was abrupt.

"Are you there?" shouted Mr. Riker. "You see," he went on to explain, "this is one of the original cars and the springs are a little short. The later springs are longer and there is more comfort with them."

The chains had stretched earlier in the contest and after being shortened at Erie a start was made, only to have the reverse pinion break. With no word of complaint, Mr. Riker got out, removed his coats and started on a four and one-half hours' job. "Too brittle," was all he said, as with Mr. Schultz, his mechanic, he slid on his back under the car.

"Isn't he the best man on earth?" said Mrs. Riker, admiringly. "Any other man would have sworn. He never does. Just takes things as they come and is patient."

Finally, a start was made again at 3.15, and with two hours' running over rough and dusty roads Ashtabula, forty-four miles, was reached just at dusk. From there in it was dark, with only one lamp

to show the way until at Painesville the electric car line to Cleveland was met. Then for mile after mile in better than three minutes we followed a street car with a powerful headlight. Ruts and bumps were encountered without slacking speed. Unable to get away, the motorman finally slowed down in order that he might provide light in the rougher spots. Then came the plank road, a detour to avoid a bridge, and —Cleveland.

CONDITION OF CARS EXAMINED IN PITTSBURG—START FOR HOME.

Staff Correspondence.

PITTSBURG, Oct. 18.—The examination of the twenty-five cars which survived has been completed and the machines released from Banker Brothers' garage. This work occupied two days—Friday and Saturday. A few of the cars that are going home under their own power have already started and others that are to be shipped will be sent to-morrow.

Guest on Knox 25 in Endurance Run Describes Hardships Suffered.

After the hardships incidental to a pouring rain and almost impassible bad roads for eighteen hours on Car No. 31, to relieve this unfortunate car from an excessive load, the writer sought conveyance in car No. 25, hoping thereby to even up conditions with reference to load of the two cars, and possibly to get better conveyance. When at Afton, immediately upon changing cars, we reached—entirely unawares and at the bottom of a long grade —a stream which had overflowed its natural course to such an extent that the one house nearby was completely surrounded, and only the rails of the bridge were in sight. As it was just dusk quite a little delay was experienced in attracting the attention of any one to relieve us from our stalled position in about thirty inches road again submerged, and were told by bystanders that the water was not more than 2 1-2 feet deep. As this was near the danger point, we immediately sought the services of a farmer on horseback with fifty feet of rope to tow us across. At this time the water was rising at from three to six inches an hour, and evidently the bystanders who had given us the depth of the water, did not appreciate the increase since last the measurement had been taken, as we soon found that the water was 3 1-2 instead of 2 1-2 feet deep. This was sufficient to reach a five-pound can of carbide and immediately we discovered a white smoke coming out at the front end of our wagon which suggested that this carbide had ignited, and in an attempt on the part of our operator to open the place

COMPETING CARS STORED IN BANKER BROS. GARAGE, AFTER FINISH OF THE RUN, IN PITTSBURG.

Yesterday the two Fredonias were started on their way back to Youngstown, when No. 20, the tonneau car came to grief in a downtown street. It had reached Wood Street, on Fifth Avenue, when a trolley car which makes a sharp turn to the right at that point, crowded it into the curb and smashed its front right wheel and bent the axle. It was occupied by F. L. Thomas and Mrs. Thomas.

Mr. Thomas pulled out all the spokes and ran the car on its hub to the foot of Liberty Avenue, about six blocks, to the Pennsylvania freight station for shipment home, and he and Mrs. Thomas went home by rail. C. T. Gaither, operator of Fredonia No. 19, accompanied by H. S. Stevenson, made the run to Youngstown last night on the road.

The examination of the cars in the garage was made by Henry Souther of Hartford, assisted by M. L. Downs, superintendent of garages, and M. C. Reeves, assistant superintendent of garages. The examination went particularly into gear cases, the gears, wheels, steering mechanism and bearings to see the effects of the work and wear on the trip.

of water. After repeated efforts of the voice and horn to attract attention, we secured the services of a young man on horseback, with fifty feet of rope, to pull us safely to shore. From this point to Binghamton the roads were simply beyond description; in one instance for nearly a mile the road was submerged by water of a depth varying from one to two feet, and our passage was secured through seeking a meadow outside of the road. In this meadow we were once stalled but obtained relief from our position by the services of a rope and tackle in the hands of two strong natives. At the close of these efforts it was thought best to rest for the night and to take time for a general going-over of the car, and so a full night's rest was taken and a start made at 4 o'clock on Sunday morning for Binghamton, and just as people were going to church this car sailed up the main thoroughfare with a great deal of dignity on the part of the passengers and operator; a dignity induced partly by what they had accomplished and partly from the fact that we had apparently reached *terra firma*. About four miles from Binghamton we found the where the carbide was stored, the flames immediately burst upon his hands, which were burned so seriously that it later necessitated his discontinuing the run. Almost at the same moment, the smoke burst into flame directly in the faces of the people occupying the front seat. We jumped into the water, but finally, by the aid of wet clothing, we succeeded in opening the compartment containing the carbide, and with a foot-board pushed it from the wagon into the water, where it sailed away with a flame at least ten feet high. As the road was a new-made macadam, sharply rounded up in the center, and the fences were entirely submereged, there was no way of following the road except by following the horse which was forty feet away, and unconsciously in attempting to fight the fire, the operator had guided the car away from the center of the road, so that only the very top of the back of the seats were above water. Having turned the wagon so that the wheels were not exactly in line with the horses made the car draw so hard that the rope broke. In order to get a new hitch, it was necessary for some one to duck down to the front

axle, and in so doing only one's head could be kept above water, and as at this time the cushions and wearing apparel and other movable articles were floating away, a boat was secured and these movable items loaded in and removed to a railway track nearby. The horse, however, having seen so much that was unusual in the way of water and fire, positively refused to have more to do with the automobile, and after bothering for twenty or thirty minutes it was decided that some new power would have to be secured and another horse was sought, but as is the case with some horses in deep water, this one refused to draw, and so another half hour was wasted, and nearly an hour and a quarter had been spent by the operator of this car in water at all times above the waist and sometimes above the shoulders. When a rope 200 feet long was secured bystanders on the railroad track succeeded in pulling the car back to its original starting place, and from there it was towed back five miles to Binghamton, where new batteries and new coil were secured, and where we obtained dry clothes, having traveled in wet clothes for ninety-six hours.

In five hours the car again proceeded. In order to get by the submerged place which had previously caused us so much trouble, it was necessary to take a street railway track which left the highway at this point, and proceeded parallel with the steam railroad. After going about three miles on the street railway track we had finally reached the grade of the steam railway, and by taking the bed of the latter a bridge was available to cross the troublesome Susquehanna River. An interview with the tower master at this point guaranteed us a clear track for thirty minutes, and so we proceeded on the steam railway track for two miles, crossing two bridges where the limitations of the passage-way were within one inch of prohibiting our use of the bridge, but even an inch leeway was a tremendous relief after having rattled over the ties for five miles.

At Unionville we were told by apparently reliable citizens that if we were to proceed over the regular route from that point we would find various places that were impassable, and that during the night it would be impossible to find any one who would assist us in getting across these places, and also that by going over a certain mountain all of them would be avoided. There were no houses on this mountain except at the very bottom and the very top; it proved to be a continual rise of from 15 to 22 per cent. for just one mile. Near the top of the mountain one of our lights went out and it developed that none of us had any matches except some which had been soaked by water till they were useless, and as we were very thirsty and fatigued, we decided to wake up the sole resident of that district, which we did about midnight, and we learned from him that to continue to the other side of this mountain would only put us in a worse predicament than when we started, as we would find water just as deep and no one to assist us, whereas over the other road there were many residences, and so we were advised by him to by all means retrace to Unionville, which we did somewhat reluctantly, appreciating that the three hours' hard night work had been wasted.

In the next sixteen miles we probably found not less than twenty places where the whole road was submerged by water, but as one of the occupants of the car had secured some hip-boots, we adopted the plan of wading each place and determining in advance whether we would be able to proceed under our own power. Our judgment on this point proved mistaken twice, and our engine was stalled, but we were able to push the car out and proceed.

AUGUSTUS POST WHO FOLLOWED THE RUN TO PITTSBURG IN HIS BLACK WHITE CAR.

About ten miles after leaving Unionville we reached a point where there seemed to be a lake of no small magnitude; somewhere near the middle we could hear the voice of some one, which proved to be the operator of Car No. 18, who had run into this lake on his own power and became stalled about the middle; he had been there about 2 1-2 hours making every effort of his vioice and horn to attract the attention of some one to assist him, without success. Immediately upon learning his predicament, Car No. 25 proceeded to wake the nearest available farmer and sought to get his services to tow not only No. 18 but No. 25. At this house we found stored in the barn Nos. 19, 20 and 3, all of which had arrived some time during the night, but on account of a small, weak bridge, it had been thought unsafe to tow these machines across in the dark, and they were waiting for the dawn of day. The occupants had been taken across in a boat and were enjoying the privilege of a hotel on the other side of the lake. This particular farmer could not tow us across as his horses were young and would not work in the water. He, however, directed us to another half a mile or so distant, whose services we secured, and about 6 o'clock A. M., we were safely landed on the other side. At this point we were told that about a mile and three-quarters beyond was a place where it was impassable even with the aid of a horse, as the water was from six to eight feet deep, and to get around this 1 3-4 miles it was necessary to go some 16 miles over a mountainous wood road evidently never intended for other traffic than to draw the wood from the land adjoining; the grades were certainly more than 30 per cent. and it required the services of nine men with every effort available, to get any car over this route. The occupants of Cars Nos. 25, 19, 20, and 18 having joined forces, by a combined effort succeeded in getting all of these cars over the mountain.

Some progress was now made for about twenty miles, when a point was reached where a new road was building and a temporary bridge being erected. By reconstructing the roadway with stones and timber, the bridge was gained, and while we had been warned that this roadway was impassable to automobiles without the assistance of a horse, we had congratulated ourselves that we had accomplished something that others had not, but after gaining the bridge it developed that for nearly two miles on the other side was a new roadway of coarse gravel saturated with a rain-fall of three days, where again we were obliged to seek the services of the reliable old horse.

As it was now late in the evening of the second night since leaving Binghamton, we were delayed nearly two hours in getting the necessary assistance, but no further delays were experienced except those incidental to faulty ignition, caused by the thorough soaking which our vehicle

had had in all parts, together with our jolting over the railroad tracks which had loosened every electrical connection, and just as we thought that we were to have clean sailing to Bath our engine stopped, and for four hours we were looking for a spark. During this four hours the writer availed himself of the first opportunity in the last forty-eight hours to lie down by the side of the road under a tree and get nearly two hours of sleep.

At Bath, as a result of the burns received at Binghamton, it was necessary to change operators. Leaving there at about 11 o'clock on Tuesday morning our car proceeded without delays except from ignition troubles and a disposition of our chain to come off because we were running without chain struts which had been broken on the second day out; and the 447 miles were covered in forty-seven hours with only six hours' sleep on the part of the operator and no sleep from Saturday until Friday night on the part of either passenger or observer in the wagon, except such as was gained while sitting in the wagon.

About ninety miles from Pittsburg No. 24 was overtaken somewhat in trouble because of the failure to secure the proper lubricant, which was seriously affecting the power, but as the occupants of No. 25 were interested in car No. 24 it was thought best to assist them on the severe grades which we knew were in advance, and hence our car was delayed in arriving at Pittsburg until after the closing of the garage. This delay also gave us the opportunity to enjoy three distinct thunder storms in the Allegheny Mountains, which lasted nearly through the entire night Thursday, making the steep grades almost impassable because of their wet, slippery surface which was made up almost entirely of clay.

As shown by the illustration on this page the experience recorded by the guest on the Knox car was closely duplicated by others.

Rikers Retrace Contest Route.

Mr. and Mrs. A. L. Riker left Pittsburg Tuesday morning in the Locomobile which was No. 36 in the Endurance Run, intending to retrace the course of the contest for the entire distance back to Weehawken and incidentally secure pictures showing the nature of the natural difficulties of the route, in a more leisurely manner than could be adopted by any of the photographers and press representatives following the event.

Greater gasoline capacity will be found in cars on another long run. Men left "miles from nowhere" without gasoline will not soon get caught in the same predicament again.

Horns became so choked with dirt that many a human voice became a horn the last day with some weird effects quite as comical as the hoarse howl of the horn itself. As a rule no horn was necessary for the farmers were watching for the motorists.

From a Retouched Photo by C. H. Phelps, Sidney, N. Y.

TWO FREDONIA CARS CAUGHT IN THE SUSQUEHANNA RIVER FLOOD SIX MILES WEST OF UNADILLA ON OCTOBER 10.
An instance of the conditions confronting many of the participants in the Endurance Run.

OBSERVATIONS ON THE ENDURANCE RUN BY AN OBSERVER.

Unlimited determination brought Edward Collier through his 340-mile journey from Bath to Youngstown in twenty-five hours. That run gave him and his Rambler 17 an enviable reputation. No one will ever realize the hardship endured by Collier. The strain was fearful. Small wonder that Collier fell asleep while trying to eat. During the long trip his Rambler ran perfectly, and a night's rest at Youngstown set him right. Collier was thanked by T. B. Jeffrey with moist eyes.

"Confound the points. Give me first place every time," said F. B. Stearns, the last day. "The public don't understand the points, but do think it a race. I want to win every time."

The Toledo two-cylinder car ran with the same cooling water for four full days.

New Yorkers knew it for what it was—an endurance test. In Ohio and Pennsylvania is was looked upon as a race. Both sections were right.

General Miles will find in the endurance test added arguments favoring his suggestion that automobiles replace horses in the army. Collier's run of 340 miles in 25 hours is a strong argument.

Every farmer on the road admired pluck and the formerly despised automobilists were bidden God speed everywhere. "Good luck to you," was a frequent salutation.

There was nothing fashionable or stylish in the appearance of the endurance test followers who attended dinners in rubber boots and sweaters, but they were not disdained.

Al Cowan in the Knox traveled over a mountain near Barton to avoid washouts and broken bridges. He was dragged out by horses four times and at Bath purchased machine oil for cylinder oil, cutting his cylinders badly.

Franklin 24 car was never required to blow up its Fisk tires, which finished with the New York air still in them.

The proposed hill-climbing contest on a 10 per cent. grade which was abandoned would have been child's play to the successful climbers of the hills of the last day.

Between Darlington and Beaver Falls the worst range of hills were encountered on the last day. Grades of 12 to 20 per cent., rough and slippery, were frequent for ten miles.

"Cross bridge. Note—bridge is not safe," were the directions in the red book for a place near Poland and a sign, "condemned" on the bridge. added nothing to the confidence of operators of big cars.

Unable to throw apples into the faster autos, some school children between Youngstown and Pittsburg hung them on fishing lines and the passing drivers grabbed them as they went.

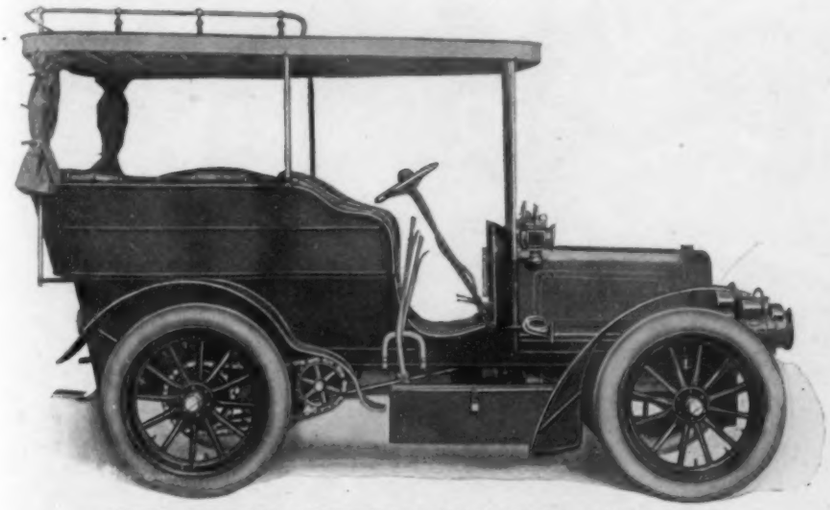
TABLE SHOWING ARRIVAL AND DEPARTURE FROM NIGHT CONTROLS IN THE ENDURANCE RUN.

No.	Class	Names.	Operator.	October 7. Weehawken. Depart.	October 7. Pine Hill. Arrive.	October 7. Pine Hill. Depart.	October 8. Binghamton. Arrive.	October 8. Binghamton. Depart.	October 9. Bath. Arrive.	October 9. Bath. Depart.	October 10. Buffalo. Arrive.	October 10. Buffalo. Depart.	October 12. Erie. Arrive.	October 12. Erie. Depart.	October 13. Cleveland. Arrive.	October 13. Cleveland. Depart.	October 14. Youngstown. Arrive.	October 14. Youngstown. Depart.	October 15. Pittsburg. Arrive.
2	G	Columbia	B. B. Holcomb	A.M. 4– 7.01	P.M. 1– 3.00	A.M. 11– 7.28	P.M. 6– 8.13	A.M. 12– 8.02	P.M. 1– 5.00	A.M. 7– 8.00	A.M. 9– 1.42	A.M. 6– 7.12	P.M. 3–12.26	A.M. 3– 7.00	A.M. 4–11.32	A.M. 7.55	A.M. 4–11.40	A.M. 2– 7.00	P.M. 2– 2.00
3	G	Columbia	L. Duffie	6– 7.02	22– 5.14														4.35 p.m. Oct. 16.
4	D	White	Geo. Waite	3– 7.01	17– 4.38	23– 7.55	10– 9.21	7– 8.24											
5	D	White	Webb Jay	7– 7.03	30– 7.50	22– 7.49	1– 6.43	3– 7.44	4– 6.04	5– 6.42	1– 2.24	2– 7.06	2–12.06	2– 7.00	2–10.55			1– 7.00	1– 2.00
6	D	White	Paul Deming	8– 7.03	31– 7.50		8– 6.43	10– 7.44	5– 6.29	6– 7.46	4– 6.00	7– 7.12	6–12.33	5– 7.05	3–11.06			5– 7.03	3– 2.00
9	G	Toledo	M. W. Winters	11– 7.06	2– 3.05	12– 7.50	5– 8.08	6– 8.17			10– 6.40	1– 7.00	4–12.16	7– 7.03	5–11.37	7.54	6–12.31p.m.	3– 7.01	17– 4.12
10	G	Toledo	Geo. Soules	12– 7.05	4– 3.54	4– 6.59	4– 8.07	4– 7.51	7– 7.20	3– 6.41	6– 6.45	5– 7.10	8– 7.09	8– 7.09	7– 2.05p.m.	7.55	9– 1.39p.m.	12– 7.07	15– 3.15
13	C	Phelps	L. J. Phelps	18– 7.09	18– 4.45	8– 7.14													
14	D	Pierce Arrow	Chas. Sheppy	1– 7.00	16– 4.36	9– 7.18	3– 8.04	8– 8.27	3– 5.53	2– 6.40	3– 4.47	15– 9.15	13– 3.33	9– 7.10	13– 5.17p.m.	8.07	14– 2.54p.m.	16– 7.10	12– 2.48
15	B	Pierce	P. P. Pierce	2– 7.30	23– 5.18	1– 6.50	13–11.01	2– 7.40	8– 7.44	1– 6.07	2– 4.35	4– 7.10	8– 1.22	6– 9.02	12– 5.05p.m.	7.52	16– 3.33p.m.	17– 7.11	16– 3.44
16	D	Packard 'Old Pac	E. T. Fetch	9– 7.04	8– 4.03	3– 6.55	11–10.53	9– 8.32	6– 7.05	9– 8.15	5– 6.25	10– 7.30	11– 4.26	4– 7.00		1– 7.00	3–11.45	10– 7.06	9– 2.22
17	A	Rambler	Edw. Collier	10– 7.05	24– 5.38	6– 7.07											19–	18– 7.12	18– 4.32
18	A	Rambler	A. Gardiner	22– 7.11	12– 4.20	7– 7.12	12–10.59	5– 8.04	9–11.32	8– 8.14	8– 1.25	8– 7.21	5–12.32	14– 7.33	6– 1.18p.m.	8.22	12– 2.00p.m.	9– 7.05	5– 2.00
19	B	Fredonia	C. F. Gaither	33– 7.55	33– 1.19														7.00
20	A	Fredonia	F. L. Thomas	34– 7.58	32–11.30													9.30	9.41 a.m. Oct. 16.
23	B	Knox	H. M. Davis	15– 7.07	26– 6.00	25– 8.00								17– 9.54	13– 5.33p.m.	7.56	8– 1.37p.m.	8– 7.05	13– 2.57
24	D	Knox	J. E. Cowan	16– 7.08	11– 4.14	13– 7.21								18–10.50					11.31 a.m. Oct. 16.
25	D	Knox	F. H. Fowler	17– 7.08	10– 4.12	15– 7.22													11.43 a.m. Oct. 16.
26	B	Franklin	W. H. Bex	29– 7.28	7– 4.02	16– 7.23					15–11.23	12– 8.00	12– 2.39	13– 7.21	8– 2.24p.m.	8.06	7– 1.11p.m.	11– 7.06	4– 2.05
27	B	Franklin	H. L. Winter	28– 7.37	6– 4.08						13– 9.25	14– 8.32	10– 1.53	10– 7.15	9– 2.53p.m.		3– 2.16p.m.	13– 7.07	5– 2.04
28	B	Franklin	J. Wilkinson	30– 7.39	20– 7.07	24– 7.56													
29	B	Haynes-Appers n	Geo. Barnes	23– 7.25	9– 4.02	10– 7.19													
30	B	Haynes-Appers n	Frank Nutt	24– 7.25	20– 5.07	19– 7.29	15–12.05a.m.	13– 9.15			14– 9.30	9– 7.30	9– 1.30	15– 7.34	14– 6.12p.m.	8.35	15– 3.14p.m.	7– 7.04	11– 2.35
31	D	Haynes-Appers n	H. W. Lauterm n	25– 7.26	27– 6.05														2.30 p.m. Oct. 16.
32	A	Northern	V. M. Gunderson	27– 7.27	25– 5.47														
33	A	Northern	A. W. Hall	26– 7.26	20– 5.07	21– 7.41	16– 2.55a.m.	17–10.46											
34	A	Northern	A. Doucoes	21– 7.10	5– 4.00	18– 7.47													
35	E	Stearns	F. B. Stearns	20– 7.00	3– 3.07	14– 7.21	7– 8.40	1– 7.23	2– 5.17	5– 6.48	7 7.04	3– 7.09	1–12.03	1–10.55	1–10.55	7.53	2–11.44	14– 7.08	7– 2.07
36	G	Locomobile	A. L. Riker	5– 7.02	13– 4.25	20– 7.32	9– 9.16	15– 9.31						16–11.30	16–10.30	10.55	17– 5.30p.m.	19– 7.13	8– 2.17
37	A	Holley	G. M. Holley	31– 7.30															
39	A	Olds	C. Roberts	13– 7.06	15– 4.35	2– 6.05	14–12.15a.m.	10–10.25			12– 9.25	13– 8.19	15– 4.13	12– 7.20	11– 3.36p.m.	8.08	10– 1.48p.m.	6– 7.03	14– 2.58
40	A	Olds	D. J. Wurgis	14– 7.07	14– 4.29	5– 7.00	2– 7.25	14– 9.25											
41	A	Olds	L. Whitman	19– 7.09	28– 6.45		17– 4.10a.m.	19– 8.40			11– 9.25	11– 7.37	14– 4.02	11– 7.17	10– 3.32p.m.	8.07	11– 1.49p.m.	15– 7.09	10– 5.43
42	B	St. Louis	G. P. Dorris	32– 7.35	19– 4.57	17– 7.26													

Where no time is marked the car arrived after closure of official garage and made up the distance to next control where time is marked by running without reference to schedule time and usually both nights and days. Figures before times of arrivals and departures denote the numbers of the respective cars; where the time, but no number, is given, the car was not identified by the compiler of this table.

Apperson Brothers 1904 Model Car.

In many respects the new four-cylinder cars made by the well-known Apperson brothers, are a departure from those previously associated with their name. In adopting the vertical motor, pedal control system, cross counter-shaft and two-chain drive, they have put themselves in line with the most widely prevailing practice of to-day for high-power cars; but the details of the machines show considerable independence and originality of thought.



NEW APPERSON BROTHERS FOUR-CYLINDER TOURING CAR.

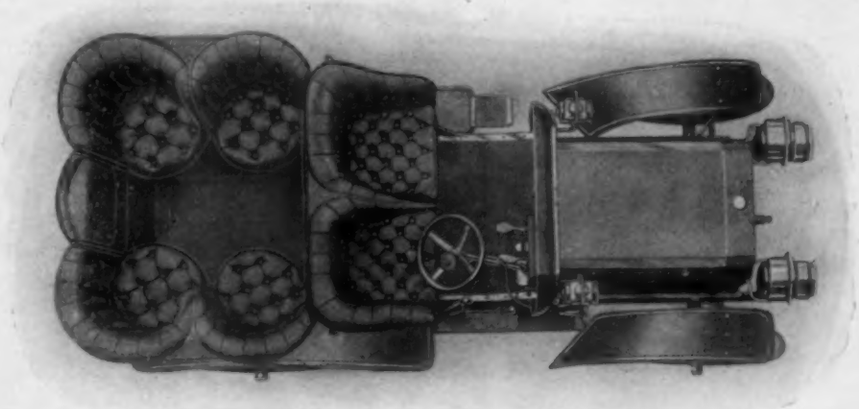
The machine shown in the photographs is one of the first of its particular model, but it corresponds in all important particulars to the regular design. The main frame of the running gear is built up of angle steel filled with wood, with the corners reinforced. No false frame is used, the upper half of the motor crank case being cast with feet reaching to the main frame. Two angle steel cross members support the change gear box. The front springs are semi-elliptic, 38 inches long, and the rear springs are either full elliptic, as in the photographs, or semi-elliptic, 40 inches long. The latter distribute the frame support better, and Mr. Elmer Apperson stated to the writer that he had found little, if any, difference in riding qualities between the two. Although the cuts do not show it, the side sills of the frame are trussed, making them very stiff.

The motor cylinders are cast separately but with integral heads, and are 5 inches bore by 6 inches stroke. Like all the Apperson motors, this is run at moderate speeds, and the piston speed does not exceed 800 feet per minute. Both inlet and exhaust valves are mechanically actuated. They are placed side by side in pairs, with the spark plugs over the inlet valves, and but one half-time shaft is used. The valves are all of the same size, and are made as large as their arrangement will permit. Relief taps are mounted in the cylinder heads and also midway of the stroke, the latter set being connected for simultaneous opening. By means of a hand pump on the dash, small amounts of kerosene may be forced on to the piston rings to free the latter at the end of a run.

As above noted, the gear-box is hung from two cross members of angle steel. Of these, the rearmost is the heavier, and to it the gear box is bolted as rigidly as possible, giving it a fairly constant alignment with respect to the outboard countershaft bearings. These latter are of anti-friction type, and at present have solid rollers, for which it is proposed to substitute extra heavy Hyatt roller bearings. As shown in the cuts, the counter-shaft is continuous from end to end, except for the division in the center of the differential. The omission of the usual Oldham couplings between gear box and outboard bearings does not appear to cause binding of the shaft, doubtless because of the very rigid construction of the frame and the care taken in lining up and securing the back end of the gear box.

Transmission from the engine to the first gear-shaft is effected through a clutch very similar to the well-known Haynes-Apperson wind-up band clutch. The clutch drum is about one-half the diameter of the flywheel, and is bolted to the spokes, The metal band surrounding it is attached at one end, as in the Haynes-Apperson clutch, to one of two opposite arms extending from a central hub. the other arm serving merely to steady the band. This hub just mentioned is journaled on a short extension of the crankshaft. It is about 4 1-2 inches long, and the journal bushing is 3 1-2 inches long. The rearmost inch of the hub's length is devoted to a central square recess, into which the squared forward end of the first gear shaft loosely enters. The hub, therefore, while turning with the gear shaft, is centered and aligned with the flywheel and clutch drum, thus insuring perfect contact without cramping between the drum and the band carried by the hub arms. The band is tightened in the same manner as in the Haynes-Apperson, by a lever or dog acted on by a knuckled wedge moving lengthwise of the shaft. A ball-bearing thrust collar, moving loosely on the gear shaft and actuated through a lever by a spring and by the clutch pedal, imparts motion to the wedge. The spring is stiff enough to force the wedge home, after which the lever actuating the thrust collar comes against a stop, relieving the clutch of end thrust due to the spring. In this position, owing to the rounded form of the wedge, the clutch locks itself like any ordinary band clutch.

Contrary to the usual custom, the steering column is located to the right of the brake pedal instead of between the latter and the clutch pedal. A small pedal to the right of the steering column acts on the throttle, and another between the clutch and brake pedals acts on the spark lead. The jump spark, like a good deal else about the machine, is a new departure

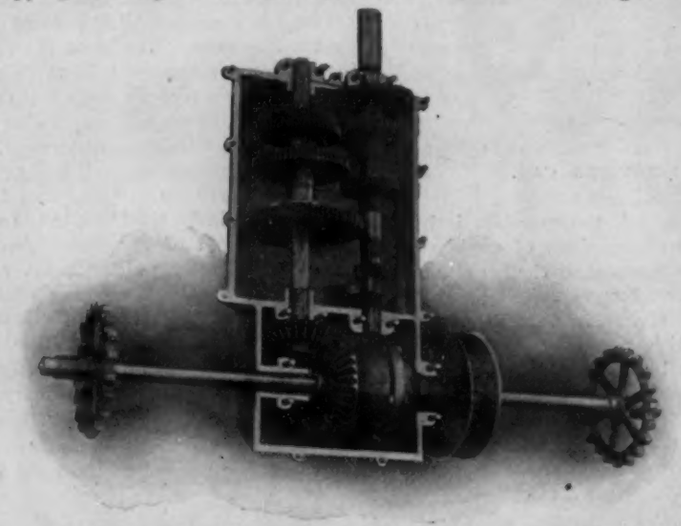


TOP VIEW OF APPERSON BROTHERS 1904 MODEL.

for the Apperson Brothers, but its details are fully worked out. The distributer is located on the back of the dash, where the fibre ring with its brass segment is driven by a sprocket chain. The mounting carrying the four brushes is covered by a polished brass cap, and is arranged to oscillate by connection with the small spark pedal. A brass spring arm attached to this mounting works over a saw-toothed sector, serving the double purpose of preventing accidental movement and indicating positively the lead of the spark. As it is necessary, therefore, to lift the spark pedal up as well as to press it down, a spring is arranged under it so that a light upward lift with the toe is sufficient. Separate spark coils are used.

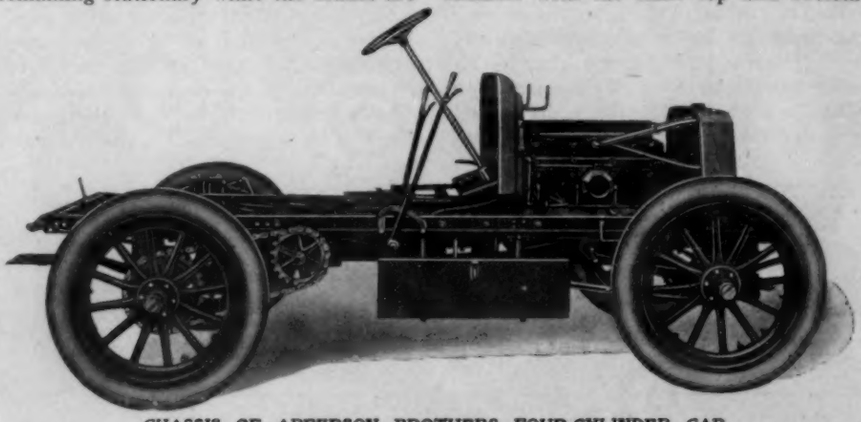
The speed-change gives four forward speeds and one reverse. The gears on the second shaft, instead of the first as usual, are made to shift. No attempt is made to avoid passing through intermediate speeds when stepping from high to low, and one lever gives all four speeds and reverse by a continuous motion. The gears themselves are all forged from mild open-hearth steel and thoroughly case-hardened. The bevel gears are 4 pitch, 1 1-2 inch face, and the speed gears 7 pitch, 1 1-4 inch face. The journals are oiled by grooves leading oil from the interior of the case, and it is claimed that, on account of the unusual clearance of the gear box under the gears, no trouble is given from cutting of the boxes by metal dust worn from the teeth. It is, of course, necessary to draw off and renew the oil periodically. The thrust of the bevel gear is taken by hardened and ground tool steel rings, one pair back of each gear. Owing to the position of the camera, they cannot be seen in the photograph of the gear box.

The brakes are about of the usual sort, a double-acting band being applied to the countershaft brake drum by the pedal, and a ratchet lever applying bands to the rear wheel hubs. The latter lever is arranged to release the clutch during the first half of its motion, withdrawing the thrust collar above noted sufficiently to release the clutch dog, and thereafter remaining stationary while the brakes are tightened. Although from the photographs it might be thought that the rear wheel brakes are single-acting, their arrangement is, in fact, such as to be nearly as effective backward as forward.



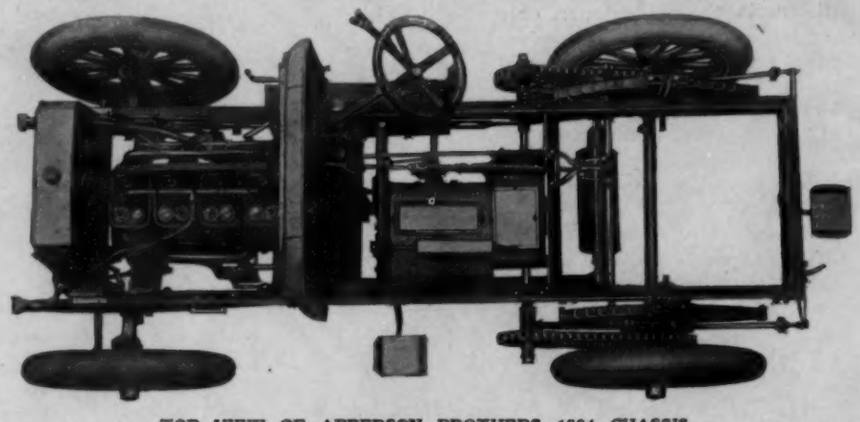
CHANGE SPEED GEAR, DIFFERENTIAL AND COUNTER-SHAFT.

A centrifugal pump, bolted to the engine crank-case, provides for forced circulation. The cuts show a honeycomb radiator with flattened tubes and without flanges, but this has been found to have insufficient cooling surface for the large motor power. In its place will be used a radiator with the same top and bottom headers as now, but with the connecting space filled with quarter-inch vertical tubes with flanges. These will afford a rapid circulation with large cooling surface.



CHASSIS OF APPERSON BROTHERS FOUR-CYLINDER CAR.

The axles have nickel steel spindles, and the hub bearings are of Damascus bronze. The gauge is 56 inches, and the wheels are 36 inches diameter, with 4 1-2 inch clincher tires. The gasoline tank, under the operator's seat, holds 18 gallons. Automatic oilers are used wherever possible. The removable canopy top is provided with cleats and staples for strapping baggage on top, and with storm side curtains and swinging glass front. A portmanteau on the back of the forward seats provides for space for wraps, and a large carrying space is added under the floor of the tonneau. The other appointments include two Solar headlights, a pair of oil side lights, a tail light, and another lamp arranged to light up the rear step and the license tag.



TOP VIEW OF APPERSON BROTHERS 1904 CHASSIS.

Grant Ball Business Sold.

The Standard Roller Bearing Company, Philadelphia, Pa., has purchased the entire steel ball business of the Grant Tool Company, Franklin, Pa., formerly of Cleveland, O. The Standard company is prepared to fill orders for the well-known Grant ball, formerly made by the Grant Ball Company,

of Cleveland, O. For a short time the ball business will be continued in Franklin, that orders may be filled promptly, but it will eventually be moved to Philadelphia and consolidated with the Standard plant. R. H. Grant, formerly manager of the Grant Ball Company, will have charge of the ball making plant in Philadelphia, and a number of the former employes of the Grant company will go with him from Franklin to the new home of the business.

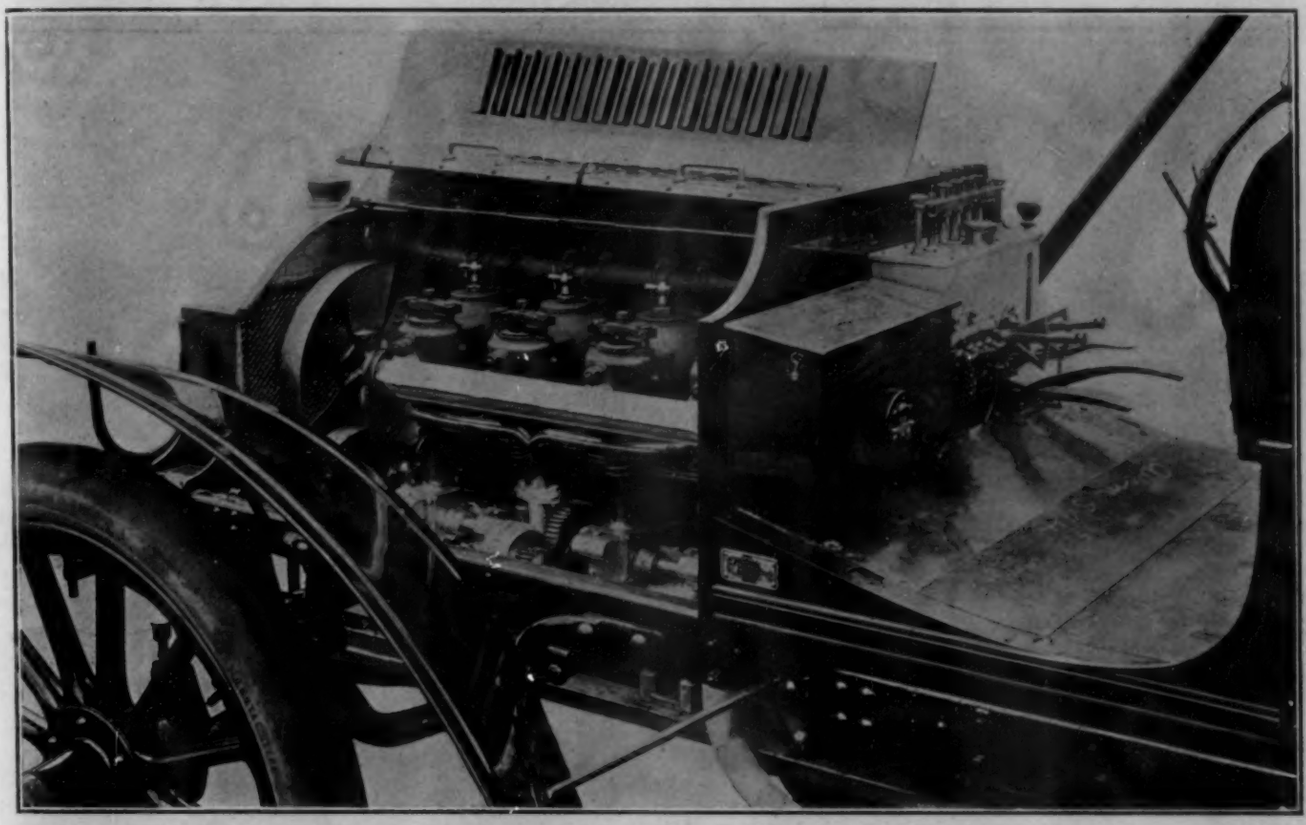
An Artistic Salesroom.

An excellent example of a salesroom, as distinct from a combined salesroom and garage, is that of the New York Garage Company, 140 West 38th Street. The general appearance is artistic and is the conception of Manager E. B. Gallaher, who has long had the idea in mind, having outlined the scheme more than a year ago to a representative of THE AUTOMOBILE. Starting with the outside color scheme of light buff front walls, set off by the woodwork painted in black, with a flat finish—and all lettering on distinctive lines—the visitor is prepared for the interior effect. The walls are covered with burlap in two colors, divided by the chair rail, and toning into the oil-finished, hard pine ceiling. At the line of the walls and ceiling is carried a small molding and about eighteen inches below this a picture rail. The tinted and oiled floor is set off with rugs and the entire interior scheme further embellished with mission furniture.

Latest Models of Peerless Cars.

Brief mention was made, in our issue of August 22, of the 1904 model of the Peerless car, and the photograph indicated its principal external characteristics.

From fuller details and photographs now available, it appears that a noticeable advance has been made in motor and frame construction, and in numerous points of detail as well. The impress of Mercedes design is marked, but is not slavish, and purchasers of the new Peerless car will easily recognize its kinship with its predecessor of 1903 by the speed-changing gears and rear axle, which remain essentially unchanged.



FRONT PORTION OF 1904 PEERLESS CAR—SHOWING EXHAUST SDE OF MOTOR AND ARRANGEMENT OF CONTROL LEVERS.

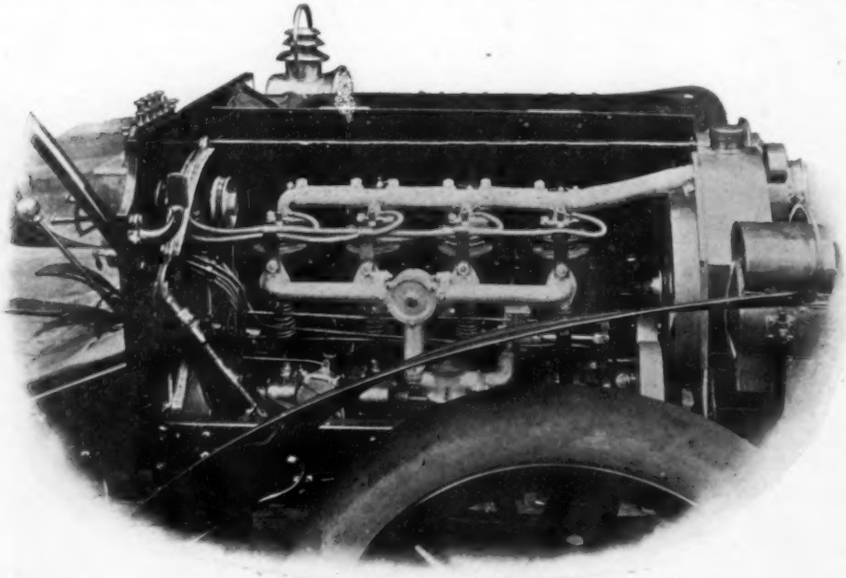
The new models comprise two cars of 24 and 35 horsepower, respectively. Each will have a four-cylinder motor, and be shaft driven. In most other particulars they are similar, but the following description applies more particularly to the 24-horsepower car.

In the chassis, the makers have abandoned structural steel for the strictly up-to-date pressed-steel tapered-girder frame of channel section. As in many foreign cars, the frame is narrowed under the hood from thirty-four to twenty-eight inches wide. This gives a neater looking front, and adds to the available arc of deflection of the front wheels, a point of some importance when a car of long wheelbase has to be turned in a narrow street. The springs are long, the front being thirty-six inches and the rear forty-two inches, and both are set to give about three inches clearance, when loaded, between the rubber buffers and the frame. The rear ends of the rear springs and the front ends of the front springs are connected to the frame by shackles, and these shackles are so made as to be "non-reversible"; *i. e.*, they cannot turn so as to bring the springs below instead of above the spring horns. Leather straps are arranged to connect loosely the frame and the front axle, to prevent the springs from opening to a dangerous extent. The steering knuckles and front axle are of the same general style as before, but are forged much heavier.

As is unavoidable with a live rear axle, the main frame is carried several inches higher than in the Mercedes car, and to get the engine as low as possible it and the gear box are, as before, carried on a false frame hung seven inches below the main frame. The clearance is about eight and one-half inches under the front axle, and the bottom of the flywheel is very little higher.

The motor is stated to develop 24 horsepower at 1,000 turns. It has an aluminum crankcase, and the cylinders are cast separately with integral heads. A departure from previous Peerless design is the use of mechanically-opened inlet valves. These

are, as usual, located symmetrically to the exhaust valves, on the opposite side of the engine, and the inlet valve mechanism is a duplicate of that on the exhaust side. The large springs will particularly be noticed. Both valve shafts are driven by fiber gears, and the inlet valve shaft drives also the distributer for the ignition (seen alongside the shaft in the photograph) and, through a belt, a force feed lubricator on the dash. The centrifugal water pump, located at the lowest point of the circulatory system is driven from the exhaust valve shaft. On account of the cylinders being separate it is easy to use separate bearings between all the cranks of the main shaft. The crankcase is partitioned into four chambers by the supports of these bearings, and oil is fed separately to each chamber for splash lubrication of the crankpin bearings. The shaft bearings have chain oilers and separate oil pockets.



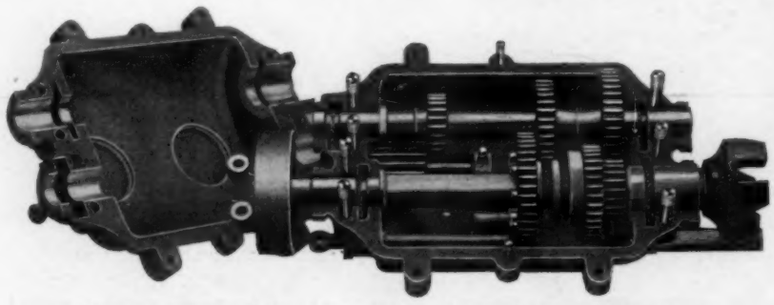
RIGHT SIDE OF MOTOR IN NEW PEERLESS CAR.

Ignition is by jump spark, with one set of dry cells and one storage battery, from either of which current may be taken through a double-throw switch on the dash. The spark time is advanced by hand, and separate vibrator coils are used. The spark plugs are screwed into the tops of the cylinder heads close to the inlet valves, where they will be fouled as little as possible by excessive lubrication. The carbureter, governor, and throttle-valve are unchanged save in dimensions.

The clutch is similar to that used this year, and explained in our issue of October 11, 1902. It is of the internal conical type, transmitting no end thrust when working. The cone is journaled on an extension of the engine shaft, insuring constant alignment, and it drives the first gear shaft through a slightly loose coupling, allowing for spring of the frame.

Although the makers state that the design of the speed-changing gears has not been changed, it may be significant that a patent (shown on page 260, September 12, last,) has been issued to Mr. Mooers, the designer, which covers a modification of this mechanism by which the secondary shaft is wholly disengaged from the primary when the direct drive is in use. The transmission gives three forward speeds and one reverse, and an interlocking device prevents the gears from being shifted except when the clutch is released.

The usual double-acting brake is provided at the back of the gear box, and a square telescoping shaft with universal joints transmits the power to the bevel pinion driving the differential. The rear axles, as may be recalled, has its cast-steel gear casing split horizontally with the fixed sleeves which enclose the driving shafts secured wholly in the lower half. As the top half serves only as a cover, it is in the new model made of aluminum. The rear wheels are dished, and the sleeves are set in the central case with a corresponding chamber. They are extended beyond the spring seats into the wheel hubs, where they are surrounded by ball bearings on which the hubs turn. The latter are driven from the differental by shafts, connected with the differential by small universal joints and with the hubs by squared ends which enter holes in two discs secured to the outer ends of the hubs. These shafts have no bearing in the fixed sleeves and carry no weight, their sole function being to transmit torsional stress. Both front and rear wheels turn on large balls, these being three-fourths inch for the inner and one-half inch for the outer row.



TRANSMISSION GEAR AND CASING IN NEW PEERLESS CAR.

As shown in the cuts, the circulating system includes honeycomb radiator and a fan. The hood, however, does not form an airtight cover as in the Mercedes car. Counting in the cylinder jacket and piping, the total water capacity is six gallons. Lubrication has been carefully attended to. The force lubricator on the dash supplies the cylinders through separate sight feeds and the oil pockets of the shaft bearings. Other pipes, controlled by a valve shutting off all at once, feed the four crankcase chambers. An auxiliary hand pump may be used to force additional oil to the shaft bearings in case of need. Thus the entire motor lubrication is under the observation of the driver. The universal joints, bevel gears, differential, and rear axle and wheel bearings are packed with grease and require very little attention.

The regular pedal control system is used. A single lever operates all three forward speeds and the reverse by a continuous movement. The rear hub brakes are self-equalizing in the new model, and are applied by pulling up instead of pushing on the brake lever at the side. Application of either brake releases the clutch. The spark control is mounted on the steering column, and the mixture may be varied by a handle near the base of the dash, working on a toothed sector. The speed at which the governor begins to close the throttle is regulated by the lever with a ball on its end, seen projecting up and back from the base of the dash. It is stated that the motor speed may be varied by throttling from 200 to 1,500 turns per minute.

The steering gear operates on the nut and screw principle as before, but the slope of the steering column has been considerably increased. making the column pass through the dash. Thirty-four inch wheels, with four-inch clincher tires, are fitted. The wheelbase is ninety-two inches and the gauge, standard. The gasoline tank has a capacity of fifteen to eighteen

gallons. The weight of the car is given as 2,340 pounds.

The body will be either of the King of the Belgians type, as shown in the photograph, with aluminum back, or "Belgian," in wood. With the former style the price will be $4,000 and with the latter $7,300. Both bodies are well proportioned, and elegantly and substantially upholstered in hand buffed, enamel, or dull leather. The tonneau of the Belgian body is slightly raised, to provide for a tire compartment under the floor. A large tool box is suspended under the rear of the tonneau. The front mudguards are of the plowshare style, and the rear are carried forward to the step. Both are of pressed aluminum and have a very stylish appearance.

STUDEBAKERS ABSORB GENERAL CO. OF CLEVELAND.

In addition to the first news of the sale of the General Automobile & Mfg. Co. of Cleveland published last week, it is now authoritatively stated that the entire assets of this company have been acquired by the General Automobile Co., an Ohio corporation recently formed. The stock of the General Automobile Co. is controlled by members of the Studebaker Bros. Mfg. Co., of South Bend, Ind., and its officers are the following: President, F. S. Fish; treasurer and general manager, T. W. Goodridge; secretary, G. A. Gaston. The new company will continue to do business at the factory occupied by its predecessors, 1312 Hamilton Street, Cleveland. The services of J. T. Dickson, as gasoline expert and designer, will be retained by the new company, and it is proposed to put out for the season of 1904 a medium priced car with ample power for touring purposes.

Reid Company to Build Touring Car.

Special Correspondence.

DETROIT, Oct. 14.—The Reid Manufacturing Company of this city will manufacture exclusively a gasoline touring car for next season's trade. The motor is to be of the two-cylinder, water-cooled opposed type, of full 12 horsepower, and located in front under a hood of the Mercedes design. The car will weigh about 1,500 pounds, will have a long wheelbase and will seat six adults comfortably. The frame will be of three-inch angle steel and will incorporate several improvements in construction. The car will sell for $1,400. A company is being organized for the purpose of providing an automobile passenger service around the city and the parks and boulevards. It will have a capital stock of $30,000, and for next season will employ six passenger carriages seating ten people each.

A. L. Darrow, a prominent farmer residing just outside of Rockford, Mich., is the first in that section to own an automobile.

CHICAGO MOTOR VEHICLE COMPANY'S ASSETS SAID TO BE LARGE.

Since the announcement of the appointment of a receiver for the Chicago Motor Vehicle Company, in last week's issue of this paper, attorney C. B. Haffenberg, representing the corporation, in answer to the claims of the petitioning creditors, has made the statement that the company's plant at Harvey, Ill., is alone worth $500,000, and that the total assets may prove to be worth $1,000,000. He admits that the debts amount to about $200,000, but denies that the assets do not amount to more than $30,000, and insists that the corporation is solvent.

Attorney Haffenberg stated that the court proceedings had been brought about by the pressing claims of a few small creditors. He said that some of these claimants were paid recently and others immediately took advantage of the situation to charge that the officers of the company had committed an act of bankruptcy. The attorney further stated that while the company had large interests behind it, the stringent situation in the money market made it impossible to pay all claims as they fell due.

Secretary of the Treasury Shaw, former Secretary Lyman J. Gage and other prominent men are said to be large stockholders Howard H. Gross was recently elected president of the concern and Henry W. Hoyt treasurer. The petitioning creditors and their claims were as follows:

American Oak Leather Co., of Cincinnati, $555; Charles Munson Belting Co., $22; Bradner, Smith & Co., $4. Judge, Kohlsaat of the Federal Court in Chicago, appointed Edwin A. Porter as receiver in bankruptcy on the allegation that while the corporation was insolvent the following preferential payments were made: To the Corn Exchange National Bank, $1,800; to Henry W. Hoyt, $1,000, and to H. H. Gross, $1,000. The receiver's bond was fixed at $100,000. A majority of the concern's employees are Seven Day Adventists and are interested in the company as stockholders.

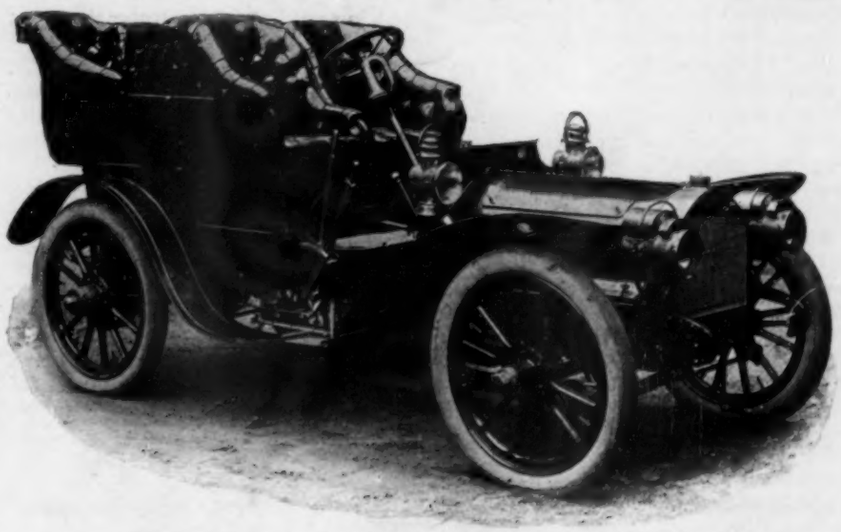
Garage for Newark—Sprag for Hills.

Special Correspondence.

NEWARK, N. J., Oct. 20.—This city is soon to have a first-class automobile station, one of the largest and best appointed in America. The Motor Car Company of New Jersey, at present occupying the first floor and basement of the bulding at 141 Halsey Street, has purchased a plot of ground on the same street and will shortly build a substantial brick structure to be used exclusively for automobiling purposes. There will be over 10,000 square feet of floor space on the first floor, on which there will be room for a well-equipped machine shop, storage accommodations for 200 machines, besides an office. In connection with the station there will be a smoking room, reading room and ladies' waiting room.

The Motor Car Company is composed of W. V. Snyder, Jr., R. T. Newton and I. M. Uppercu. Although each member of the company has been in the automobile business in Newark and New York for at least four years past, the concern has existed only one year. The machines handled are the Peerless, Autocar, Cadillac and Northern.

Jacob Dawson of this city left Thursday morning on a hunting trip to the northern part of the State, and will make his headquarters at Newfoundland, Sussex County. Mr. Dawson is one of the most enthusiastic motorists in this city. An automobile is worthless to him unless it can successfully mount the steepest hills to be found hereabouts, and he has equipped his Northern car with a spiked rod, or sprag, attached to the machine which he can instantly release to hold his car stationary should anything happen while engaged in climbing a hill.

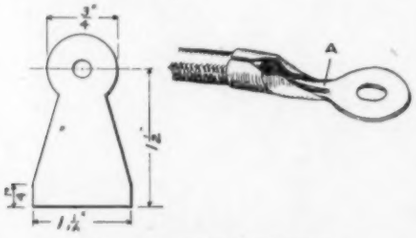


NEW PEERLESS CAR FOR 1904—KING OF BELGIANS STYLE BODY.

Mementos for Owners and Drivers.

BY R. B. BRAMWELL.

In wiring an automobile every effort should be made to secure the connection against the effects of vibration which will either brake the wires or loosen the binding screws in course of time. The old-time binding posts are now rarely used, screws being employed in the majority of cases which hold the wires securely if their ends are provided with metal terminals. A simple terminal and one that can be made easily by the amateur, is shown in the accompanying illustration. A piece of



A SIMPLE WIRE TERMINAL.

sheet brass or copper, 22 gauge or thicker, is cut to the shape shown in Fig. 1 and rolled up at the end to receive the wire, as indicated in Fig. 2.

In order to prevent the wire being cut by the terminal piece the insulation should not be stripped back to the edge of the metal, but left as shown, previous to soldering, so that no sharp corners will be presented to the conductor. The end of the wire should be well soldered at *A* and back to the insulation, the bent-up edges of the terminal piece forming a channel to receive it. Vibration is not liable to break a connection of this kind, and if the binding screw is secured with a lock nut it should not work loose.

A number of manufacturers are now using light chains as conductors between the lead wires and the ignition plugs, to absorb the vibration. The chains are not stretched tight, sufficient play being allowed to compensate for every possible movement between the motor and the body of the car, to which the lead wires are attached.

If the wiring has been carefully protected and the wires are laid in channels cut in wood strips, there should be no occasion for breakage in the general wiring system. If ordinary binding posts are used, the ends of the wires should be soldered to form a solid mass; otherwise, the constant vibration will gradually break the single strands where they are held by the binding screws, or the strands will pack and work loose.

The holes drilled through the binding posts for the wires should be slightly countersunk to avoid sharp corners. If the little detail has been overlooked, the holes may be countersunk readily by the use of an ordinary twist drill. The drill should be considerably larger than the hole through the binding post and it may be turned by hand under slight pressure until the hole presents no sharp corners.

When binding posts are made the vertical holes into which the screws are fitted are sometimes drilled too deep, so that they bottom in the transverse holes, leaving slight depressions into which the wires are forced subsequently, when the binding screws are tightened. In this event the wires are liable to shear off in course of time.

Buckets and Funnels.

It is always a good plan when touring or in fact at any other time to carry a collapsible bucket in the tool box or under the seat, which will be found a great convenience if not a necessity when it is desired to fill the water tank from a road-side stream or a watering trough, which may not be provided with a dipper or other means to convey the water. Canvas buckets having spouts are now sold at moderate prices, and if one of these is used a water funnel will not be a necessity, although the bucket spout should be covered with a piece of linen or other material to strain the water, so that no foreign matter will find its way into the supply tank.

A strainer funnel for filling the gasoline tank should be provided, and this funnel should never be used for any other purpose. It is a good plan to have two funnels, one for water and one for the gasoline, and if the former is painted blue and the latter red there will be little danger of getting them mixed, even if used at night. Round funnels take up considerable room, so that those of flattened shape will be found desirable. These may be purchased of any automobile supply dealer and at many hardware and stove stores. If a funnel provided with a filtering gauze cannot be procured readily it is an easy matter for a tinsmith to solder a piece of fine brass wire mesh in an ordinary funnel, near the top of the feed tube.

All gasoline contains more or less water, and it may be found advantageous to keep one or two layers of fine linen cloth in the gasoline funnel, which will be found to collect a considerable quantity of water, after the gasoline has been filtered through it.

Ice Formation in Carbureter.

Frost forming on the carbureter is sometimes a source of trouble in cold weather and has been known to form in the passages, when traveling in the rain. Either of these troubles interferes or prevents the proper action of the apparatus.

If one of the air passages is provided with a tube opening near the muffler or a warm part of the mechanism there should be no difficulty from this cause. Failing this provision it is not a difficult matter to attach a piece of rubber tubing or hose leading to a source of warm air, as a temporary expedient, until a metal tube can be fitted permanently. Some operators wrap the carbureter with asbestos rope during cold weather, in addition to fitting a warm air tube, in order to retain as much heat as possible in the apparatus.

Although everybody knows that heat is required to generate steam from water, it is not so evidently apparent that heat is required to vaporize gasoline, although such is the case, the process taking heat from the walls of the carbureter and tube by absorption. As vaporization continues, the metallic parts may become chilled to a degree sufficient to turn the surrounding moisture-laden air into frost, which collects on the carbureter and other parts.

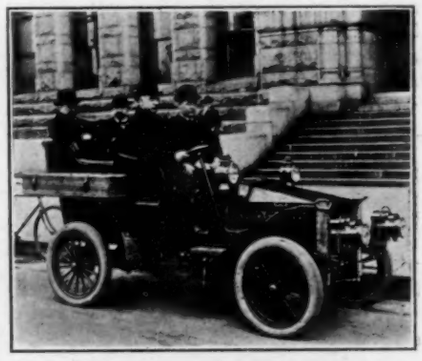
When the carbureter is chilled, vaporization is seriously interfered with, because there is no source of heat to aid the process, and the gas mixture will soon fail to explode regularly if at all.

(To be Continued.)

Mission Work in Minneapolis.

Special Correspondence.

Minneapolis, Oct. 16.—The performances of the White cars in the New York-Pittsburg Endurance Contest proved of unusual interest to H. S. Haynes of this city. Mr. Haynes has this week secured the Minneapolis agency for the machine. The day following the arrival of the contestants at Pittsburg a party of city officials were taken on a run in the machine and were photographed at the city hall. In



A DEMONSTRATION TO CITY OFFICIALS.

the car at the wheel is seated Mayor J. C. Haynes, a brother of the agent, and with him Superintendent of Police E. J. Conroy. George Douglass, the Mayor's private secretary, occupies the right rear seat, and to his left is Health Commissioner C. M. Hall.

ENGLAND TRIES THE NEW GERMAN ANTI-DUST COMPOUND.

The new road covering composition, "Westrumite," had a practical demonstration on the Crystal Palace "parade" during the British reliability run lately ended. This demonstration consisted,

first, of the proper treatment of the roadway, which appears to have been macadam, and, second, of an exhibition of the method of mixing and diluting the ingredients. These latter, according to the *Automotor Journal*, consist of crude petroleum and tar, mingled and treated with ammonia and caustic soda. The resulting emulsion is soluble in water, and is applied from an ordinary sprinkler wagon. A 10 per cent. solution is first used, after which the road is kept in condition by occasional applications of a 5 per cent. solution. The residuum left after the water has evaporated acts as a binder, but whether it has sufficient tenacity to cement the surface of a dirt road, for example, into a firm crust, or whether it serves merely to hold down the dust, is not clear. Our contemporary, describing the appearance of the road a week after the first application, says that "as distinguished from the roads treated with crude oil or tar, the surface was left porous, so that rain is capable of passing through it without collecting on the top and forming puddles." If true, this would seem an obvious demerit instead of otherwise, as the first function of a road surface is to keep the water from getting at and loosening the foundation beneath. Probably, however, further applications are to be understood as necessary.

As to expense, the cost of the first application is said to be about one-half cent per square yard for materials. Regarding durability and the extent to which the compositions may take the place of other dust-binders, it is too early to speak. It may be conjectured that the virtue of the process lies in the forming, by the union of the alkaline ingredients with the oil and tar, of an emulsion utilizing a greater percentage of the crude oil than is represented by the asphalt naturally contained, and which is the sole reliance in ordinary oiling processes.

Olds Company Refunds Bonus.

When the Olds Motor Works, in Detroit, were destroyed by fire, the city of Lansing, Mich., raised a bonus of $4,750 to induce the afflicted company to remove to Lansing. While a complete removal was not effected, the company earned the bonus by establishing a factory in Lansing, but, being now unwilling to continue under obligation, has turned the bonus over to the Lansing Business Men's Association.

Germany's Sixth Annual Show.

The sixth annual International Automobile and Bicycle Exposition in Germany was held in the Crystal Palace, Leipsic, commencing on Thursday of last week and continuing until Wednesday last, and conducted under the auspices of the Society of German Bicycle Manufacturers.

John D. Rockefeller has bought another automobile. He now has two Cleveland licenses.

TOURING IN ELECTRIC CAR FROM BOSTON TO NEW YORK.

Proving conclusively that a properly designed electric vehicle is practical for long distance touring through a district where charging facilities may be secured every forty or forty-five miles, a mud-spattered electric surrey reached New York direct from Boston just before noon on Tuesday last, having covered the road distance of about 260 miles by easy stages without a hitch of any kind, although the road and weather conditions were most unfavorable during the greater part of the journey.

The vehicle that established this new record for electric cars was not constructed for demonstration purposes, neither is it supplied with any extraordinary equipment. It is a standard road vehicle of touring car type, fitted with a comfortable tonneau. The car seats six persons, and the power equipment includes a 40-cell battery and two 10-horsepower electric motors, mounted on the rear axle, gear driving to each of the rear wheels.

F. A. BABCOCK OF BUFFALO, WITH FAMILY, IN ELECTRIC TOURING CAR.

F. A. Babcock, president and general manager of the Buffalo Electric Carriage Company, and his son, F. A. Babcock, Jr., treasurer of the company, accompanied by J. J. Coakley, a Boston newspaper man, left the "Hub of the Universe" at 11 o'clock on the morning of Thursday, October 15, in the car that made the run to New York, which is shown in the accompanying illustration. This photograph was taken before the tour was begun and includes Mrs. Babcock, who joined the party at Stamford, Conn., and Miss Babcock.

On the first day a noon stop was made at South Framingham for lunch, and the party arrived at Worcester in the evening without incident. On Friday morning the battery was charged for the first time after leaving Boston, and at 2 o'clock in the afternoon the journey was resumed, Warren being reached at 5 o'clock in the evening after a pleasant ride through a beautiful section of Massachusetts, the Brookfields, Spencer and other villages in the picturesque Cherry Valley attracting the interest of the strangers.

"There ain't no auto. station here," replied one of Warren's younger set, in answer to an inquiry, but F. A. Babcock, Jr., who drove the car throughout the trip, soon made arrangements with the engineer at the Warren Steam Pump Company's plant, and it was not long before the cells were bubbling with fifty miles of electric energy, and the trip was continued to Springfield, over very sandy roads, making progress slower and the "Arsenal City" was not reached until after midnight. The car was left in a local automobile station and at 10 o'clock Saturday morning, with the batteries fully charged, the tourists left Springfield, bound for Hartford.

Instead of crossing the Connecticut River at South Springfield and proceeding down the west bank of the river, passing through the village of Agwam, which road is far preferable, the party remained on the east bank and were obliged to travel through soft, yielding sand for miles, which quickly turned to a muddy ooze before noon under the influence of a pitiless rain which set in at 11 o'clock and continued during the many dreary hours following.

Arriving at Hartford for dinner, it was decided that F. A. Babcock, Jr., and Mr. Coakley should proceed alone, and arrangements to meet Mr. and Mrs. Babcock, Sr., at Stamford were made. The battery was charged at Hartford and later in the

afternoon Meridan was headed for and reached shortly after 9 o'clock. In the vicinity of New Britain heavy roads were experienced, due to the continued rain, and on approaching Meridan they seemed almost impassable in places.

Traveling from Meridan to New Haven on Sunday morning, after the battery had been charged, the roads were found good, excepting on approaching Wallingford. The party dined at New Haven, and the battery was charged at the New Haven auto. station, Mr. F. A. Ward showing the tourists special courtesy, and in the afternoon the run to Bridgeport was made under most agreeable conditions of road and weather.

Leaving Bridgeport early Monday morning, with the battery fully charged, Stamford was reached at 10 o'clock. Here Mr. and Mrs. Babcock, Sr., rejoined the party, and after charging the battery the tour was continued to Mount Vernon.

Early Tuesday morning the run toward New York was started, the final stage of the journey being made under ideal conditions.

At Central Bridge, in Harlem, a very pleasant feature of the Boston-New York tour took place. Knowing that the party was to reach the metropolis Tuesday morning, the Buffalo Electric Carriage Company's New York agents, Babcock, Atwood and Bowen, invited members of the trade and a few newspaper men to run up to the Bridge to greet it. In response the following were on hand:

K. C. Pardee, and Messrs. Smith, Dudley and Bradley, in a Packard car; I L. Atwood, Dr. Walter Conley and G. L. Henry, in a Reber; Dr. and Mrs. Jose L. de Victoria, Buffalo stanhope; Mr. and Mrs. Van Ness, Buffalo stanhope; E. T. Birdsall and Messrs. Morgan, Smith, Partridge and Bramwell, 16-horsepower Decauville; F. H. Bowen and J. W. Ferguson in a Buffalo stanhope, and the Babcock party.

It is interesting to note that throughout the trip the battery was charged only seven times, the average distance on each charge being forty-seven miles. The cost of each charge averaged slightly over $1.30. The car is fitted with a Helios-Upton battery of 110 volts and 25 amperes. The total weight of the car, which is the first of its type, is 3,600 pounds. Solid rubber, flat-tread, three-inch tires are used.

PARADE OF AUTOS DRAWS WORKMEN OUT OF COLLAPSING BUILDING.

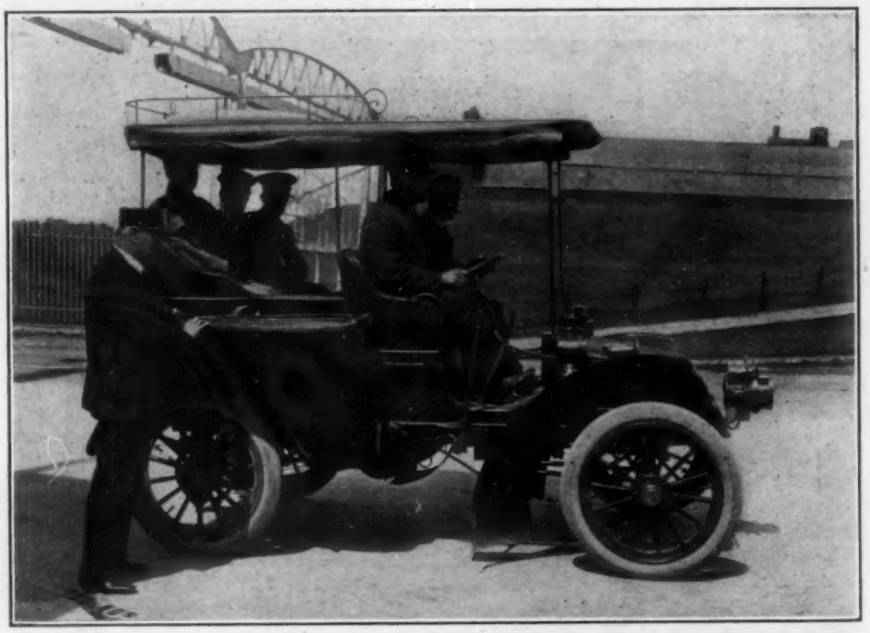
Special Correspondence.

OMAHA, Oct. 12.—The Knights of Ak-Sar-Ben and their thousands of out-of-town visitors made merry in earnest here last Wednesday, the feature of the day's enjoyment being an automobile flower parade, which passed through the streets at 3 o'clock. A peculiar coincidence was the fact that while many workmen from the Union Pacific railway shops were out on the sidewalk watching the parade, the walls of the brick extension of the shops collapsed, upon the few employes who remained in the building, killing one man and injuring several others. Physicians believe that several would surely have been killed and many more badly injured had not most of the men been out of the building.

The pageant was a most novel one, and the well-decorated runabouts, touring cars and large passenger vehicles were interspersed with bands of music and floats representing the industrial and commercial business of the city and State. The streets were lined with thousands who had gathered to witness the parade, which was on the largest scale ever undertaken by the Knights.

Inspection by Customs Officers in America.

The automobilist in America is rarely put to the small annoyance and delay of submitting to the inspection of customs officers. This sort of officialism, together with that of examining passports, is generally looked upon as the especial pleasure reserved for the tourist in European countries. The accompanying engraving, reproduced from a photograph, however, brings forcibly to the mind of the American that even on this side of the Atlantic the tourist must submit to such governmental inspection if he cares to extend his trips beyond the borders of his own land.



U. S. CUSTOMS INSPECTION OF E. G. ACHESON AND PARTY AT NIAGARA FALLS

The immense size of the United States and the fact that there are but two foreign countries on the continent make international tours of rare occurrence, but such a tour was recently completed by E. G. Acheson, of Niagara Falls South, Ontario, Canada, discoverer of the process of making carborundum, artificial graphite, siloxicon and "Egyptianized clay." Accompanied by Mrs. Acheson, their two sons and a professional operator, he made a cross-country jaunt of 600 miles to Kittanning, Pa., in a 12-horsepower Packard touring car fitted with canopy top and glass front.

CLASS FIGHT IN QUAKER CITY ON SPEED AND LICENSE QUESTIONS.

Special Correspondence.

PHILADELPHIA, Oct. 19.—The automobilists of this city have decided to fight fire with fire, and will take steps to make drivers of horses toe the seven-mile-an-hour scratch in Fairmount Park or suffer the consequences. At last week's meeting of the Automobile Club of Philadelphia it was decided to open the crusade by stationing men with stop-watches at certain places where horsemen have been wont to let their nags out, and if they exceed the limit call upon the guards to arrest them. By thus making the law universally obnoxious—it is now enforced against automobilists alone—it is hoped to bring about its annulment.

It has developed that in many instances the park guards have arrested automobilists at the request of drivers of carriages, and the meeting thought that this tit-for-tat scheme, although it would array the two classes against each other in a bitter fight, will eventually make the owners of horse flesh see the error of their ways. It was pointed out that the case was almost identical with that of the bicyclists many years ago. The horsemen fought them tooth and nail, but public opinion and justice were on the side of the pedal-pushers and they made a winning fight.

The press is almost unanimous in denouncing the "persecution" and "macing" of the automobilists, and many of the more prominent dailies have published cartoons which show up the city and park authorities in anything but a favorable light.

The meeting also took up the subject of the constant fining of club members by officials of suburban townships, regardless of whether they are exceeding the speed limits or not, and it was decided to make a test case of the arrest of Samuel Bell, Jr., who was arrested near Radnor on the night of October 4 and fined $12.50 by Justice Buckland, at Rosemont, for exceeding the speed limit of ten miles an hour prescribed by a township ordinance. The license tag issued by the State, which was displayed at the rear of his machine, permits a speed of twenty miles an hour on country roads. Mr. Bell says that in driving over the three miles of road which lay in the township he had actually met not a single vehicle or pedestrian on the road. No marks delineating the boundaries of the township are set out, and, even if they were, they could not be seen on a dark night unless illuminated. The case will be fought on the ground that the township ordinance is at variance with that of the State and should therefore be declared null and void.

Vice-President John S. Muckle suggested that a movement be inaugurated by the club to urge the United States Government to issue a federal license for automobilists which should obviate the necessity of procuring State or municipal licenses, with their accompanying tags. As it is now, many machines in this city display half-a-dozen leather or metal tags swinging behind.

Autos in Telephone Repair Work.

General Manager Leland Hume, of the Cumberland Telephone and Telegraph Co., with headquarters in Nashville, Tenn., is utilizing the automobile for repairing the wires of the several long-distance lines owned by the company. Mr. Hume has been using a motor car in making his inspection trips through Tennessee and Kentucky, and has given his machine a thorough and very practical test. After several months of experiment he has concluded that an automobile can be made of great service, and has purchased a new car especially for the Louisville territory. His own car is kept where the long-distance repair force can procure it at any time, and it is used on long-distance lines around Nashville when Mr. Hume is not using it on one of his inspection trips. The use of an automobile by the Louisville department is probably the forerunner of a like service at all central points where the roads are good.

E. T. Fetch has started driving a Stearns car from Pittsburg to New York over the contest route in the briefest possible time.

Tour of the Gliddens in Europe.

Touch the Arctic Circle in Northern Sweden—See the Cup Race in Ireland—Barred from Norway—Rush Through Denmark—Miss the Kings at Marienbad—Afoul of Peasants in Austria—Customs Paid and Refunded—Under the Sea Level.

Special Correspondence.

BOSTON, Mass., Oct. 15.—Mr. and Mrs. Charles J. Glidden rolled up to the door of the Massachusetts Automobile Club on Boylston Street this forenoon after a long and in many other ways remarkable automobile journey in Europe. Mr. and Mrs. Glidden started away from the club on the morning of June 16 and sailed on the steamship *Ivernia*. They arrived in Liverpool, England, on June 25 and between that date and September 25, when they came back to Liverpool, covered 6,670 miles. The Pope-Robinson car which the Gliddens have used for touring in this country was left at the club garage while its owners were away, and a specially constructed Napier car had been secured in England for the long jaunt through fifteen countries on the other side of the Atlantic.

MR. AND MRS. GLIDDEN, WITH PARTY, IN PRAGUE, BOHEMIA.

While they were away Mr. and Mrs. Glidden practically lived on their car, starting every morning at 7 o'clock and riding all day. They were fifty-four days on the road and were driving 390 hours, or an average of just a little under seven and a quarter hours a day. During the 390 hours the 6,670 miles were covered, which shows an average speed of above 17 1-10 miles an hour for the whole time.

Although a great many places were visited which had not before seen an automobile, and many hard roads and much bad weather was encountered (77 of the 390 hours of driving being in rain and twice as many in mud) the tourists were well prepared and suffered no great hardships. The Napier car is of 16 horsepower and of particularly commodious construction. The tonneau is large enough so that a steamer trunk of a size sufficiently large to hold ten days' supply of clothing, could easily be carried as well as several handbags. Even with the baggage on board, the car had plenty of room for passengers in the tonneau. Twenty gallons of gasoline were carried during the trip, a sufficient supply for 200 miles. Gasoline as a rule could be obtained along the route but in that part of the trip from Copenhagen, Denmark, to where the Arctic Circle cuts across the kingdom of Sweden, carboys of gasoline had to be sent ahead by railroad and deposited at convenient intervals. The extra baggage was also sent ahead.

With Mr. and Mrs. Glidden throughout the tour was Charles Thomas, a London mechanic and expert chauffeur, and to his careful and frequent inspections of every part of the car the wonderful absence of breakdowns and delays was largely due.

There were only two accidents, and $25 covered the damages. The breaking of a pump spindle caused a half-hour delay, and there were six punctures, about ten tires being kept in service. Mr. and Mrs. Glidden and Mr. Thomas handled the car by turns. No other persons covered any considerable part of the route, but it was often necessary to have an interpreter along, and frequently guests were taken on board for jaunts of short duration. Natives of the countries through which the tourists were traveling were given their first rides by motor car and most of them enjoyed the sensation.

As soon as Mr. and Mrs. Glidden arrived in Liverpool on June 25 they found their car waiting for them. Going on board at once, before night they had traveled in it 100 miles to the west, stopping at Bangor. The next day they crossed the Irish Sea from Holyhead to Dublin and on June 27 circled the Gordon Bennett race course in eight hours. During the day of the race Mr. and Mrs. Glidden had seats on the grand stand just over the course and watched the contest with much interest. Independence Day was celebrated by Mr. Glidden by the offering of a cup for a contest in the Phœnix Park races at Dublin. For the next eight days the party toured through Ireland, going to Belfast to the north and returning through the center of the island by Limerick and Killarney to Waterville, which was the most westerly point reached on the tour. Thence they continued along the southern and eastern coast back to Dublin having ridden 1,510 miles in Ireland.

Recrossing the Irish Sea to Holyhead the party passed through Wales and across England to Hull, where they shipped the car to Copenhagen. A short drive from there to Elsinore in the north of Denmark, and a sail of three and one-half miles across the strait brought them to Helsingborg, the real starting place of the dash to the Arctic Circle. They arrived at this point July 29. Mr. Glidden originally laid his plans to go northward through Norway, and had secured his passports and other necessary credentials. This was, however, previous to the fatal first stage of the Paris-Madrid race. After that contest the authorities of Norway imposed such heavy restrictions upon the automobilists that they decided to abandon the Norway route and to make the advance northward through Sweden. Among other things the Norwegian officials required was that the route to be taken by the car should be published in the local papers in every section of the route six days in advance; that the sheriffs of the towns through which the party intended to drive should be notified of the exact hour of the intended arrival, and that a courier on horseback should be sent ahead to warn the inhabitants that the car was coming.

Sweden Mr. Glidden found to be remarkably well equipped with telephone service, which fact appealed to him strongly, by reason of his extensive experience in that business. Wires lined the road all the way and the people made use of them to herald the approach of the car, and to tell in advance the story of the attempt to reach the Arctic Circle. The result was that great crowds of the country people met them at many places, and escorted them through the villages. On all sides the tourists met with the most courteous treatment. Most of the inns in the country are subsidized by the government and are at frequent intervals along the road. This insured a good stopping place whatever might happen. The people were always interested in the machine and would follow it on foot as long as they could. Mr. Glidden often picked up natives and gave them an experience which they will always remember. At one place the automobile came up with a very old woman, who was feebly creeping along. Upon being questioned she said that she was on an eleven-and-one-half-miles walk. As the place for which she was headed was on the route of the tourists they took her on board and landed her at her destination in very short order. She was extremely thankful.

The roads through Sweden were bad. In some places they ran up and down hills of such precipitousness that the car would have to be taken back to the summit of one hill to get a start which would carry it to the summit of the next. In such cases Mrs. Glidden was sent on ahead to warn any pedestrians or vehicle drivers, and Mr. Glidden would stand half way up the hill to be climbed to trig the wheels in case the power would not carry the car up the incline. Then the chauffeur would rush down the opposite hill at a speed of fifty miles an hour and up the other side, only to get ready to repeat the performance. Most of the horses in Sweden were afraid of the car and it was necessary to get out and lead them by.

From the starting place in Sweden the route was across country to Stockholm, and from there along the coast of the Baltic Sea and the Gulf of Bothnia to Haparanda, the most northerly town of consequence in Sweden. Only once did they lose their way, and that was when they were attempting to find a road that did not exist. It had been laid out and surveyed but construction had not begun. At Haparanda, A. Martinell, the postmaster of Upper Tornea, was taken on board and the party proceeded northward across the Arctic Circle to the town of Kommis, just over the circle, which was the most northerly point reached. The country is largely inhabited by Fins and Laps, who were amazed at the sight of the automobile. They came for miles around and congregated in great crowds about the machine when it stopped. The temperature across the circle was twenty degrees colder than in London, but the tourists suffered no discomforts, as they had prepared themselves with heavy clothing. Mr. and Mrs. Glidden carried with them on the trip through Sweden silk Swedish and United States flags. The United States flag was left with the postmaster of Upper Tornea, and when Mr. Glidden got back to Boston he found waiting for him a photograph of the flag adorning the side of the postoffice wall, with an inscription in English under it stating by whom it had been left and under what circumstances. The trip from Haparanda across the Arctic circle and back was made on August 16, and completed the tour of 1,540 miles in Sweden. The longest day's run in the country was 190 miles and the shortest forty miles. Nine of the fourteen days were pleasant.

From Haparanda Mr. and Mrs. Glidden took passage on a steamer and shipped the car to Aalborg in Denmark, arriving there on August 25. That day was rainy as were the next two succeeding it, but, nevertheless, the 250 miles to Hamburg were covered, the roads being among the best on the whole tour. The following day, August 29, the run was over the 190 miles to Berlin, where the travelers witnessed an elaborate military review and parade. Good weather prevailed and on September 1 the party advanced to Dresden, taking in the festivities of Emperor's Day at Potsdam. Over some of this country extraordinary speed was attained, a kilometer in one minute being reached. Often thirty-two miles an hour was kept up but the general average was twenty-six miles an hour, which it was necessary to maintain in order to keep up the average of 17.17 miles an hour over the 4,293 miles covered into Dresden. The party crossed the Austrian frontier, passing over a mountainous, crooked road with excellent surface, and arrived in Marienbad, Bohemia, soon after the kings of England and of Greece had left. The automobile was not received with great favor in Marienbad.

The drive from Marienbad to Prague, the old capital of Bohemia, was over a rough, dusty road. At Prague the Gliddens were entertained by the United States consul Much interest was taken in the car by the people, as it was the first English car that had been seen in the city. Bad roads and regiments of soldiers on the march made the trip to Budweiss rather slow. Similar conditions were met with going to Vienna, the most easterly point reached on the journey. Coming into Vienna a great many peasants with market wagons were encountered, who resented being disturbed. It became necessary to remove the brass lights from the front of the car, as they frightened the horses along the road. From Vienna the motorists drove through a beautiful country into the heart of Styria. The roads were extremely narrow and the grades so sharp that the car had often to be lightened and the wheels blocked. Mr. Glidden found that by "compressing the four cylinders of his car" and using one brake the car could be held on the grades This gave him one brake for emergencies. In Styria gasoline was scarce and cost $1

a gallon. The drive all the way into Salzburg was over mountainous roads, but from Salzburg on to Ober-Ammergau there was a finely macadamized highway. On the evening of the arrival in Ober-Ammergau the tourists visited Anton Lang, who played the Christus in the presentation of the Passion Play in 1900.

From Ober-Ammergau the run was to Lindau, from which place in about a quarter of an hour the party was successively in Austria, Germany and Switzerland, which meant the payment and repayment of as many duties. As a general rule, the party had no trouble about duties, paying when they entered a country and receiving the money back when they left, but at some places there was trouble in finding just the right kind of money which the officials would accept. In one place when Mr. Glidden asked the return of his money, the customs officials had not enough in the treasury, and had to borrow among the people of the village, giving Mr. Glidden something over $100 in small bills. Rain followed the travelers from Lindau to Troyes, France, and detracted very much from the pleasure of the beautiful scenery. From Troyes until the end of trip, however, there was fair weather, and the best roads encountered in any country, taking the trip as a whole. Mr. Glidden was much impressed with the fine garages in Paris, especially that of Fournier. The 200 miles from Paris to Calais was covered in one day, Brussels was reached September 22 and Rotterdam September 24. In Belgium the roads were paved and were bad for automobiling. but here and there was a stretch of macadam, which was much appreciated. In Holland the roads in some places were paved badly and ran along the dykes, sometimes above the sea-level, but more often below. From Rotterdam the car was shipped across the channel to Harwich and on September 25 by the record drive of the tour, 210 miles, Mr. and Mrs. Glidden reached Liverpool and the 6,670 miles was accomplished.

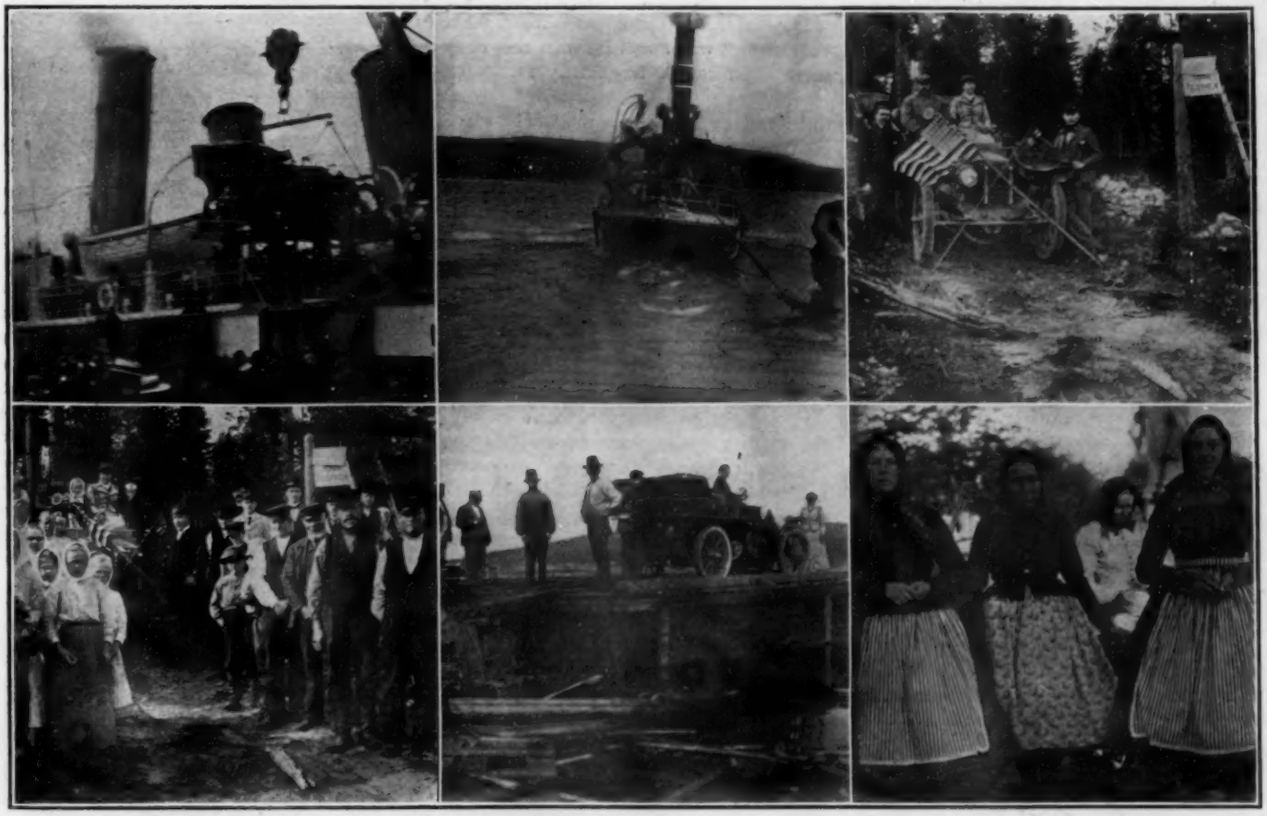
During the trip through so many countries Mr. Glidden met with many interesting experiences with the officials. As a general rule his French and German permits to drive were accepted and he was allowed to pass unquestioned. In Holland he was obliged to take out a voluminous permit of four closely written pages and a number. Even this permit did not always serve the purpose. At one place in Holland the car was held up by a police officer. He was shown the permit, but rejected it. Then he was shown in turn the French and German licenses, but these also he did not consider sufficient. Finally, as a last resort, Mr. Glidden pulled out his American passports, and at the sight of these the officer smiled and allowed the party to proceed. Mr. Glidden left his Napier car in England, where the storage charge is only sixty cents a week. His Renault car has arrived in Boston and will be used by him in connection with his Pope-Robinson tourer. At present he has made no definite plan for his next tour, but he has a route in mind and during the winter will look closely into its possibilities. This route is no less than around the world by the way of Siberia.

NEW FACTORY NEAR PITTSBURG FOR LOOMIS OF WESTFIELD, MASS.

Special Correspondence.

The Pittsburg Autocar Company, of Pittsburg, Pa., which was incorporated recently, as mentioned in last week's issue of this paper, has purchased the Star Match Works, at Latrobe, Pa., occupying an acre and a half of land and representing an outlay of $70,000. The plant will be remodeled. The company will manufacture the Loomis gasoline touring cars designed by Gilbert Loomis, who formerly built these cars at Westfield, Mass. The company has purchased the Loomis patents. Gas engines may also be manufactured.

Mrs. Jack Latta of Goshen, Ind., recently drove her Winton touring car from the Auditorium Annex in Chicago to the Oliver House in South Bend, a distance of 105 miles in five hours, and her friends claim her to be the most skilful and daring woman driver in the West.



Embarkment at Hull, England. Towed Across Swedish River. At the Arctic Circle.
Fins Came from Miles Around. A Ferry in the Northland. Finnish Women Posing.

SCENES FROM MR. AND MRS. GLIDDEN'S AUTOMOBILE JOURNEY TO THE ARCTIC CIRCLE.

THE AUTOMOBILE

VOL. IX. NO. 17

Published Every Saturday
by
THE CLASS JOURNAL CO.,
Flatiron Building, Madison Square,
NEW YORK CITY.

Cable Address - - - - Autoland, New York
Long Distance Telephone - 300 18th St., N. Y. City

SUBSCRIPTION RATES:

United States, Canada and Mexico, One Year, $2.00
Other Countries in Postal Union, - One Year, $3.00

To Subscribers—Do not send money by ordinary mail. Remit by Draft, Post-Office or Express Money Order, or Register your letter.

FOREIGN SUBSCRIPTION AGENTS:

ENGLAND:—Iliffe & Sons, Limited, 3 St. Bride Street, Ludgate Circus, London E. C.
FRANCE:—Boyveau & Chevillet, 22 Rue de la Banque, Paris.
GERMANY:—A. Seydel, Mohrenstrasse 9, Berlin.

To Advertisers—Copy or changes in orders for advertisements for the issue of the week following should reach us not later than Saturday.

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Entered at New York, N. Y., as second-class matter.

The Automobile is a consolidation of The Automobile (monthly) and the Motor Review (weekly).

SATURDAY, OCTOBER 24, 1903.

THE CHURCH, THE AUTO AND THE DEVIL.

Planted cosily on the outskirts of Chicago is a suburb, Oak Park by name, which numbers among its residents many of the Windy City's bluest-blooded *elite*. It is a quiet place, given to godliness on Sundays and gossip on every day, and not even the puffing "Red Devil" of banker John Farson, who is one of the residents aforesaid, has availed to disturb its tranquility—till lately.

Unhappily for the continued peace of this charming retreat, the pastor of its First Methodist Church, the Rev. John Norris Hall, has given evidences of a coquetting with modernity by no means acceptable to the straight-laced elders of his flock. In spite of hostility, there was some hope for ultimate concord until one unlucky Sabbath, when Dr. Hall and John Farson rode out to the Methodist camp-meeting grounds in the "Red Devil." Since then—but it is too harrowing to dwell upon. Enough that, after weeks of turmoil, the unhappy pastor sees no hope of escape from wagging tongues and hostile scowls save in flight. That the Farson horses were enabled to enjoy their Sunday rest mattered not. That the congregation is rent in twain, and that Mr. Farson has asked for his church letters, are facts alike unavailing to move these flinty pillars of the church. So Dr. Hall, if the conference accepts his resignation, will shake the dust of warring Oak Park from his feet, and go where horses and men are allowed to rest on Sunday.

He will not have far to seek. New York would welcome him. There is a familiar story of a Scottish dominie, devoted to his parish and also to golf, who found the language necessary in addressing the gutta-percha sphere so incompatible with his cloth that he decided to give it up.

"Gie oop the gowf?" ejaculated a horrified fellow-devotee to whom he imparted his painful resolution. "Mon, ye'll never do that?"

"Na, na, Sandy," was the dominie's sorrowful reply. "It'll be the meenistry."

But Dr. Hall's choice will be approved by all reasonable men. Though their names be similar, there is little of kinship between the Red Devil on wheels and the Tertium Quid to the World and the Flesh. It is not the Church, but the Devil in the church, on whom Dr. Hall has turned his back.

CLEARANCE SPACE AND VALVE SIZES.

The notable advances in the art of gasoline motor design during the past few years, and the greatly augmented piston speeds and mean effective pressures to-day obtained in the best class of these engines, are rightly deemed a cause for congratulation among engineers and public. But it is as true of gasoline motors as of anything else that no progress is made without cost and of one small item in this cost we have been rather frequently reminded of late.

In the past two or three weeks we have received a number of inquiries regarding compression spaces and valves sizes, from beginners evidently about to build their first engines. These queries have been answered in our correspondence column with as much definiteness as was possible from the data given, but withal, in several cases at least, with some misgivings as to the probable results to follow from the taking of our carefully calculated advice. And this was not in the least because the dimensions recommended were unsuitable for engines of the character specified. On the contrary, we have every reason for believing them to represent the most approved practice for high-class engines. But, alas! there is such an enormous gulf betwixt the modern high-power engine, with its piston speeds reaching 1,000 or 1,200 feet per minute under load, its high compression, its nicely-calculated valves, springs, and reciprocating parts, and its perfectly-adapted carbureter,—and the honest but primitive first attempt of the amateur!

When a correspondent declares his intention of building a motor having a piston speed of seven hundred to a thousand feet per minute, and in the next breath asks what its valve sizes should be, he makes its morally certain that he is equally in need of information regarding most of the other dimensions of the proposed engine. And it is nearly certain also that the engine, when built, will not develop its full mean effective pressure at anything like the anticipated speed.

The result, unless the experimenter has money and grit, will be a large reduction in the speed; and then, of course, the valves and intake piping will be needlessly large, and the compression space injuriously small. The piping can be reduced, and the valves are no great matter, but the compression space can seldom be changed without making a new piston or mutilating the engine by blocking up the cylinder or head.

So far as possible, we aim to anticipate disappointments of this sort by indicating the speed for which the compression space given is best adapted, and in the matter of valves to indicate the steps by which the sizes are calculated. In this way we hope not only to give the particular correspondent what he needs, but to inform the general reader as well. But in general the beginner will run less risk of disappointment if he expects and provides for a moderate speed only.

With a *sang froid* contrasting rather strangely with the indignation which the doings it describes ought naturally to excite, the Atlanta *Journal* narrates an alleged fast run of the publicity automobile connected with the Southern Interstate Fair, from Atlanta to Macon. The run was made to call attention to the opening of the Fair, and it certainly ought to have been successful. According to the unabashed reporter, the "Red Devil" (they are all Red Devils nowadays) made a noise audible for miles, raised a dust-cloud suggesting a Western cyclone, and frightened all the horses and mules along the route into conniption fits. The "terrific clip" of the machine was airily mentioned with praise for the chauffeur's skill in getting speed out of the car. Now, the distance from Atlanta to Macon by the route taken is not over a hundred miles, and the time consumed is given as five and one-half hours. So it really seems as if the reporter, not the car, was responsible for some of the horrors enumerated. Probably he had to "make copy," and did the best he could to justify the space filled. But think of the impression which that sort of stuff gives the public!

A formula for anti-freezing solution was published in the correspondence column last month, but as several new requests for it have been received it may be worth repeating. For temperatures above zero Fahrenheit, use a solution of calcium chloride (not chloride of lime) of a specific gravity of 1.15, as hown by a densimeter. For temperatures above minus 15 degrees, make the density 1.20. For evaporation,

replenish with clear water. When the tank is of zinc or galvanized iron, this solution will corrode it. For such a case, use a 30 per cent. solution of glycerine, to which should be added one part of carbonate of soda to fifteen parts of glycerine. Either liquid should be drawn off and renewed once a month.

Curious though it may seem, the highways of Cuba are better than many in our own country. Automobiles have found only a limited vogue there as yet, but this is doubtless owing as much as anything to the poverty of the island. Before long it will no doubt be a profitable market for American manufactures.

Some up-to-date Westchester County, N. Y., burglars are conducting their "opertions" with the aid of a fast automobile and a yacht on the sound. At least, so the *World* reports, and if you see it in the *World* it's—well, worth reading, anyway. But the burglars must be richer than most of their kind if they can afford such expensive paraphernalia.

HIGHWAY COMMISSIONERS INSPECT 500 MILES OF ROADS IN THREE AUTOS.

Special Correspondence.

BOSTON, Oct. 17.—Snugly stowed away in three large touring cars the Massachusetts Highway Commission started out from this city on Tuesday morning on the longest road inspection trip by automobile that has yet been attempted. In the party were the three commissioners, W. E. McClintock, Harold Parker and John H. Manning, the secretary, A. B. Fletcher and Frederick H. Nash attorneys.

The start was made at 11.15 A. M., and the party expected to reach Springfield, ninety-eight miles away, before night. The route was through Watertown, Waltham, Weston, South Sudbury, Marlboro, Northboro and Shrewsbury to Worcester, thence through Leicester, Spencer, Brookfield, Warren, Palmer and North Wilbraham to Springfield. On Wednesday the commission made side trips in the morning from Springfield to Agawam and Chicopee, and then drove to Pittsfield *via* Chester, Becket, Hinsdale and Dalton. From Pittsfield a side trip was made to the New York State line at Lebanon, and then the trip was continued to North Adams, where the party stopped for the night. Thursday the party drove to Northampton and, after luncheon, made side trips to Amherst and Mt. Tom, after which the trip was continued to Greenfield, where the night was spent. On Friday, the 16th, the route was from Springfield to Boston, and a number of towns in the vicinty of Worcester were visited. The commissioners covered more than 500 miles, and the same trip required three weeks when trains and carriages were used.

DAMAGES AWARDED FOR STATEN ISLAND SPEED TRIAL ACCIDENT.

A law suit growing out of the accident at the A. C. A. automobile speed trials on the South Shore Boulevard, Staten Island, on May 31, 1902, when the Baker electric racing machine left the road, running into a crowd of spectators with fatal results, was decided in favor of the plaintiff, Mrs. Louis Johnson, in the sum of $5,000 damages on October 19, in the Supreme Court, Staten Island, Judge Dickey presiding.

The suit was brought by Mrs. Johnson jointly against the City of New York and the Automobile Club of America, $20,000 being asked in payment of personal injuries sustained as a result of the accident. The jury returned a verdict to the effect that each of the defendants was equally responsible, and in addition to the $5,000 awarded Mrs. Johnson, an extra allowance of 5 per cent. was granted to counsel for plaintiff. Exceptions and objections made by the defendants made it evident that an appeal would be taken.

Mrs. Johnson was represented by General Kneeland, Mr. La Fetra of the law firm of Kneeland, La Fetra and Glaze; the city by ex-Congressman J. W. Coverty and Albert H. G. Haddock, Assistant Corporation Counsel of the Borough of Richmond. The Automobile Club was represented by Henry Niles, of Niles and Johnson, and by former Judge Charles R. Brown.

Four other suits as a result of the Staten Island fatality are now pending, but they will not be tried at this term of the court.

STAR SHOOTS FROM MOTOR GALAXY OF CLEVELAND—NEW ELECTRIC CAR.

Special Correspondence.

CLEVELAND, Oct. 19.—After equipping a first-class factory and manufacturing cars on a commercial basis, the stockholders of the Star Automobile Company have decided that the automobile business is not the bonanza that they believed it to be, and they will sell their remaining stock and withdraw from the business. An official of the company is authority for this statement. The members of the company are interested in other manufacturing enterprises in this city and the factory and equipment will be used for other work. The company built about twenty cars and nearly all of these have been disposed of at fair prices, so that the company comes out about even.

A new firm known as McIntosh Brothers has been carrying on experimental work at 50 Wright Street for several months past and they have perfected a gasoline car which appears satisfactory. They plan to enter the field as manufacturers next season.

A very unique electric car will soon be seen in the streets of this city. It was designed for his own use by I. Willard of the Willard Storage Battery Company and will resemble a large gasoline touring car, having large square hood and unusually large tonneau. A battery of very large capacity will be placed under the hood and another set will be under the front seat. In fact, the battery capacity will be larger in proportion than with any car Mr. Willard has previously designed, and he figures the car will run about seventy-five miles with a single charge. With exception of the controller, motor and battery, the car is being built by the Jacob Hoffman Wagon Company, and the members of that company are so pleased with its appearance that they are figuring on making a proposition to Mr. Willard whereby they may manufacture the car for the trade.

Charles Shanks of the Winton Motor Carriage Company has returned from a trip covering nearly all Winton agents throughout the West. Speaking of the Winton for next year, Mr. Shanks stated that it would have a two-cylinder horizontal motor the same as this year and that the mechanism throughout would be designed for absolute simplicity. Improvements on this car will be in the shape of refinements of details rather than radical changes.

GOLDEN GATE PARK OPEN FOR ALL —CALIFORNIA NOTES.

Special Correspondence.

SAN FRANCISCO, Oct. 12.—At a meeting of the Park Commissioners of this city held last week at the office of Adolph B. Spreckels, President of the Board, delegates appeared from the Carriage Owners and Stablemen's Association who represented that automobiles were driven at reckless speed in Golden Gate Park. The spokesman, E. R. Pease, stated that it was reported that automobilists were soon to be permitted to drive their machines on any of the roads in the Park, and asked that protection be afforded to horse-riders and carriage-drivers on the main driveway. Several of the commissioners asked questions of the delegates. In reply to one, E. R. Pease said that horses are becoming accustomed to the automobile and do not manifest so much alarm as previously. He said that horses are most alarmed by the noise of the exhaust and by a machine driven at high speed.

Complaint was made that drivers of automobiles race along Van Ness Avenue (a boulevard) and Market Street (the principal business thoroughfare) at night, in spite of the presence of policemen. In Golden Gate Park, where there is little police protection, the complainant said that the automobilists proceed at any speed they like.

A letter was read from Mr. William Alvord, president of the Bank of California and formerly a Police Commissioner of San Francisco, authorizing the sale of his horses and carriages on the ground that the automobiles have compelled him to

abandon roads on which he had been driving horses for the past forty years.

The Commissioners intimated that automobiles would shortly be permitted on one side of the Ocean Boulevard and on Forty-seventh Avenue, so as to enable them to reach Cliff House from Golden Gate Park. Certain restrictions as to the amount of space on the roadway to be given up to the automobilists and as to the speed of the machines will be made.

The National Automobile Company of this city recently received an electric omnibus capable of carrying twenty passengers. It has been bought by H. E. Bothin, who will use it to carry passengers from the northern end of Van Ness Avenue, one of the principal boulevards of San Francisco, to the Market Street car lines.

The new automobile premises of the White Sewing Machine Company at Market and Franklin Streets are called "White Garage." The unfamiliar word creates much amusement and discussion. People make bets as to the meaning of the word, some thinking that it is the name of the proprietor, others that it is the mis-spelling of "carriage," and others frankly confessing their ignorance. The last are much the fewest in number.

Free Permits in Des Moines.

The city council of Des Moines, Iowa, passed an ordinance on October 1 restricting the speed of automobiles in the business district to eight miles, and in the residence sections to twelve miles. Each car must be equipped with a horn capable of making itself heard 200 feet, and must carry two lighted lamps at night. A permit must be procured for each car from the chief of police, but this costs nothing. Each vehicle must carry a number, the figures of which must be not less than three and one-half inches high, and these numbers must correspond with the number of the permit of the owner. Violation of the ordinance is punishable as a misdemeanor. Forty-seven permits have been issued.

City Asphalt Inspector Proctor of Detroit is again in the papers on the subject of gasoline from automobiles injuring asphalt paving. He says: "I don't go back on my statement of some time ago that the injury from gasoline is too small to be considered; that is, from the gasoline itself, for the pavement will harden as soon as it is evaporated. But I noticed a horse pawing a place on Jefferson Avenue while the pavement was yet soft from gasoline drippings and it became badly disfigured."

The American Motor Coach Company, of Chicago, will operate a line of passenger motor coaches in Atlanta, Ga. The coaches are expected to be in operation by the first of November. This is the result of a quest for a Southern city which would look kindly upon automobile omnibuses *vice* an extension of its street car system.

Correspondence

Steam vs. Gasoline Vehicles.

Editor THE AUTOMOBILE:

Sir:—There are but few steam machines advertised in your paper. Can you tell us why so many more gasoline than steam machines are used? What is the objection to steam?

WING BROS.

Tacoma, Wash., Oct. 5.

A partial answer to our correspondent's query may be found in our editorial page of October 3. The commoner types of steam vehicles require, for the proper regulation of fire and boiler feed, either constant watching on the road or a multiplicity of rather delicate automatic devices which must also be watched. The strong points of the steam vehicle are its freedom from vibration and the smoothness of its control, owing to the absence of gear changes. Against these must be set its greater mechanical complexity, and likewise its dependence in large measure on the character of its water supply. The fact that the gasoline vehicle requires for its successful operation a clear knowledge of the chemistry of combustion was greatly to its disadvantage until quite recently, when the carbureter, igniter, and other parts determining the combustion were developed to the point of reasonable regularity of operation. They are still, especially the igniters, the weakest parts of the gasoline vehicle. A partial exception to the above remarks about the steam vehicle must be made in the case of certain machines using "flash" or "semi-flash" generators. The automatic mechanism of these is simpler and less delicate than that of the older power systems, and its failure is attended with less disastrous results. It is claimed also that the character of the water used is of less consequence, as impurities are carried through the tubes by the rush of steam and not allowed to settle in them.

Clearance Space and Valve Timing.

Editor THE AUTOMOBILE:

Sir:—How much room should there be between the cylinder head and piston when the piston is at the beginning of its stroke, to obtain the best results and the most power? The bore is 4 1-2 inches and the stroke 5 1-2 inches. Should the exhaust valve start to open before the piston reaches the end of its stroke and stay open till the exhaust stroke is finished? Also, what number of revolutions should an engine of that size make?

J. J. D.

Canton, O., Oct. 8.

If our correspondent is really after the maximum effective speed for his motor he should not be satisfied short of at least 1,200 r.p.m. under load. To get this speed, however, and with it the power which it ought to represent, every part of the motor will have to be designed by an expert. Practically, "J. J. D." will probably find that his best results come with a speed of not over 700 turns. At this speed the motor ought to develop 4 1-2 to 4 3-4 horsepower with medium compression.

If the valves are in the cylinder head, so that there is no valve chamber, and if both the piston head and the inner face of the cylinder head are flat, the clearance space should measure 1 5-8 inches between the two. As the piston head area is 15.9 inches, this gives a capacity of 25.8 cubic inches, or about 0.3 of the piston displacement. If there is a valve chamber, its capacity should be calculated as nearly as possible, and deducted from 25.8. The remainder, divided by 15.9, will give the required clearance from piston to cylinder head.

The exhaust valve should open when the piston is from 3-4 inch to 1 inch from the end of its power stroke, according to the form of the muffler and the speed of the motor, and should close at or a very little after the end of the exhaust stroke. A speed of 700 r.p.m. should have a "lead" of about 3-4 inch with a reasonably efficient muffler. For that speed the inside diameter of the exhaust valve should be 1 5-8 inches, and the inlet valve the same size or a trifle larger, according to whether it is cam-lifter or suction-lifted.

Acetylene Storage Tanks.

Editor THE AUTOMOBILE:

Sir:—I noticed recently your item on lamps, and would like to know the address of the people who get up the 6 by 12 inch acetylene gas tank to be used for automobiles. I have two eight-inch side lights and one center swing light on my 24-horsepower Toledo, and use a Locomotor generator made by the Rushmore people. I should like to get posted on the tank proposition, that can be charged and possibly would be very convenient compared with the generator. Do you know whether the gas tanks are a success? If so, no doubt they would be very satisfactory with my searchlights. W. C. SHULL.

Minneapolis, Oct. 13.

We would suggest that our correspondent write direct to the Rushmore Dynamo Works, who make the tanks in question. There is no reason why the tanks should not be satisfactory, if there is a generating plant in or near Minneapolis where the gas can be stored in them under pressure.

Compression Spaces Again.

Editor THE AUTOMOBILE:

Sir:—The "Gas Engine Handbook," by E. W. Roberts, contains no information regarding the ratio of compression space to piston displacement. Suppose I have a

4 by 6 engine running 600 revolutions per minute, what should this ratio be?

L. H. V.

Ft. Worth, Texas, Oct. 13.

On page 109 of the book referred to is an "ideal diagram" drawn for a compression space of 0.3 of the piston displacement. This is a very good ratio for an engine of the size and piston speed named by our correspondent. For a slower engine the compression space should be larger, and for a high-speed engine smaller; the limits being about 0.4 to 1 to a two-cycle launch motor running 300 to 400 r.p.m., and 0.25 or 0.20 to 1 for a small motor having a piston speed of 1,200 feet per minute.

Progress of Buffalo Auto Club.

With unanimity that was the highest compliment in itself, the Automobile Club of Buffalo re-elected its board of officers at the annual election held last Monday afternoon. There was only one ticket before the members, the one placed in nomination by the board of governors, for nobody cared to vote for any but the officers who gave so successful an administration last year. The officers re-elected are as follows: President, William H. Hotchkiss; vice-president, Augustus H. Knoll; secretary, Fredrick J. Wagner; treasurer, Charles Clifton; governors, Edward H. Butler, H. A. Meldrum, E. R. Thomas.

The question of establishing a club garage and headquarters downtown was discussed. Several offers of floor space and suitable rooms have been submitted and the decision was left to the board of governors.

The report of President Hotchkiss showed that the club is in a vigorous condition. Among other important facts, he showed that the membership has been doubled since the club was formed on June 2, 1903. The dues are small and the expenses have been kept down so that there is a balance in the treasury. The success of the club is largely due to the efforts of the secretary and the committees on membership and on entertainments, contests and runs.

The club's runs have been held to Hamburg, Depew and Niagara Falls. The committee on laws and ordinances has arranged an agreement with the city authorities whereby speed limits were fixed for the various streets and the Bailey Law put into operation instead of local ordinances. The committee is also seeking an agreement whereby Canada customs authorities will permit machines of club members to enter Canada without a cash deposit or giving security. The Toronto Automobile Club is assisting in this movement.

The question of joining the New York State Automobile Association and of affiliating with a national association was referred to the board of governors, which authorized to name the club's representative in case the board decides to join either of the large bodies.

AMBITIOUS FOR RACES ON THE COAST SCHEDULE FOR SAN FRANCISCO.

Special Correspondence.

SAN FRANCISCO, Oct. 12.—The most ambitious automobile tournament ever held in California will take place on the Ingleside racetrack on Friday and Saturday, November 6 and 7. The track is being specially prepared for the races, and it is expected that many new records will be made. The following program has been arranged:

Friday, November 6.—Two mile race, for gasoline cars of 6 1-2 horsepower or under. Three-mile open, for cars weighing 1,200 pounds or under. Five-mile handicap for motorcycles. Five-mile race, for gasoline cars of 24 horsepower or under. Five-mile open, for cars of 1,800 pounds or under. Five-mile open, for cars owned in the State of California. Ten-mile open. Five-mile handicap for cars that have been driven in any of the preceding races.

Saturday, November 7.—Three-mile open, for cars of 6 1-2 horsepower or under. Five-miles for gasoline cars of 1,200 pounds or under. Five-mile handicap for motorcycles. Five-mile open, for cars of 1,800 pounds or under. Five-mile open, for cars under 24 horsepower. Ten-mile open. Five-mile open, for cars owned in the State of California. Five-mile handicap, open to any car that has been driven in any of the preceding events.

The races will be under the management of the following officials: Judges, John D. Spreckels, Thomas H. Williams and R. P. Schwerin; Referee, L. P. Lowe; Clerk of Course, R. C. Lennie; Timers, Samuel G. Buckbee and six assistants.

Barney Oldfield is expected to participate in the races, and the Winton Company will send to the Pacific Coast its two racing machines. Other well-known Eastern automobile racing men are also expected.

Dayton Club's Third Race Meet.

The Dayton Automobile Club, Dayton, O., will hold its third race meet at the Dayton fair grounds this Saturday afternoon, October 24. Carl Fisher and Earl Kiser, with their twin Mohawk racers, will be the stars of the meet, and expect to easily beat the track record of 1:34 for a mile on a half-mile track. The Dayton Club's former race meets have been very successful, there being over 6,000 spectators at each meet.

ENGLISH LONG DISTANCE MOTORIST AFTER AMERICAN LAURELS.

Loxton Hunter, who drove an automobile from London, England, to Inverness, Scotland, a distance of 598 miles, in twenty-five hours and eighteen minutes, proposes to come to America early next season with the intention of breaking some of our road records. His first effort will be to "annex" the New York-Chicago record, and if he finds conditions favorable, he may attempt to set up new figures for the run from New York to San Francisco. He will be accompanied by George Ducros, an expert driver, and intends to use a French car. Mr. Hunter's record-chasing *sortie* will be made purely for sport it is said, as he is a man of means, and is prompted only by sportsmanship in coming to America. He hopes also to arrange matches with some of our amateur drivers and will tour the country extensively while he is here. Foxhall Keene is an intimate friend of Mr. Hunter, and has given him many letters of introduction to American sportsmen.

WESTERN CITY INITIATED IN ALL DELIGHTS OF MOTOR CAR RACING.

Special Correspondence.

KANSAS CITY, Oct. 15.—One accident marred the race meet given by the Kansas City Automobile Club October 8. This happened in the five-mile event, open to all weights of vehicles. D. F. Piazzek, the winner, in his 4-cylinder Toledo car, slowed down too soon after finishing and turned around on the track about an eighth of a mile from the tape. Albert T. Bossert, driving a stripped Winton touring car owned by Chester A. Snider, came up from behind too rapidly to avoid colliding with Paizzek, and in the crash the Winton was overturned. Bossert was at first thought to be dangerously hurt, but has now almost recovered.

The race meet was a success, both in attendance and in the number of machines represented. Most of the participants were club members. Aside from the regular events, there were two exhibition miles by individual machines, one of which was driven by Alexander Sutherland, 12 years old, the youngest active motorist in the city. The motorcycles made the fastest time of the day, 3 miles in 5:26 3-4. A 2,400 pound Haynes-Apperson, owned by William Huttig and driven by Elmer Apperson, made the fastest time for automobiles. It covered three miles in 5:52 1-2 The fact that the track is only half a mile long made the time comparatively slow in all races, owing to the sharp turns. A summary of the results follows:

Two miles, gasoline cars, 1,000 pounds and under.—A. O. Brooks, (Oldsmobile) first; W. G. Whitcombe, (Oldsmobile) second; F. R. Sanborn, (Oldsmobile), third. Time, 5:28 1-2.

Three miles, for motorcycles.—S. J. Vogel, (Indian) first; Ralph Baker, (Indian) second. Time, 5:26 3-4.

Three miles, open to stock automobiles.—Ed. Richter (Haynes-Apperson), first; George Haag (Haynes-Apperson), second. Time, 7:07 3-4.

One mile exhibition.—William Huttig's Haynes-Apperson car with four occupants. Time, 2:09 3-4.

Three miles, gasoline cars, 2,000 pounds and under.—M. C. Albertson (Toledo), first; A. O. Brooks (Oldsmobile), second. Time, 6:03 1-2.

Australian pursuit race, standing start.—W. G. Whitcomb (Oldsmobile), winner. Time, 6:47.

One mile exhibition.—Alex Sutherland's Orient Buckboard. Time, 2:38.

Five miles, free-for-all; limit ten minutes.—D. F. Piazzek, (Haynes-Apperson), first; A. T. Bossert (Winton), second; E. P. Moriarty (Stevens-Duryea), third. Time, 9:35 1-4.

Australian pursuit race, motorcycles.—Ralph Baker (Indian), winner.

Three miles, gasoline cars, 2,000 pounds and over.—Elmer Apperson (Haynes-Apperson), first; D. F. Piazzek (Haynes-Apperson), second. Time, 5:52 1-2.

Summary of Philadelphia Races.

Special Correspondence.

PHILADELPHIA, Oct. 15.—The entire absence of close contests gave the races at Point Breeze track last Tuesday the appearance of a series of exhibitions. The driving of Oldfield in his exhibitions and his defeat by Nunneman in the Darracq as told in your correspondent's letter of the 13th, were the best features of the meet. Nunneman's win was most popular, and the race was the best of the day. In this race, which was the five-mile free-for-all, Oldfield and Nunneman ran close together for four miles, with Oldfield having a slight advantage. It was expected that Barney would pull away from his opponent in the stretch on the bell lap, but the reverse was the case, and the Darracq won by about a hundred yards. It was a rousing finish, and brought the spectators to their feet. Following are the summaries:

Three miles, for cars under 10 horsepower—Banker Bros. (Stevens-Duryea), first; F. H. Verger (Cadillac), second; John Ford (Ford), third. Time, 5:28.

Five miles, for cars of from 10 to 20 horsepower.—James McLean (Winton), first; Chas. J. Swain (Winton), second; Banker Bros. (Stevens-Duryea), third. Time, 8:28 3-5.

Five-miles, for motorcycles.—Daniel F. McKee (Marsh), first; Harry J. Witham (Orient), second; Robert Thompson (Shaw) third. Time, 9:07.

Five-mile automobile handicap.—Edward Wilkie, 4:05 (Cadillac), first; Barney Oldfield, scratch, (Winton), second; F. A. La Roche, scratch, (Darracq), third. Time, 9:30. Oldfield's time, 6:15.

Five-miles, free-for-all.—Lew Nunneman (Darracq), first; Barney Oldfield (Winton), second. Time, 6:16 4-5.

Five-mile time trial.—Barney Oldfield, in Winton "Bullet II." Time, 5:54 1-5.

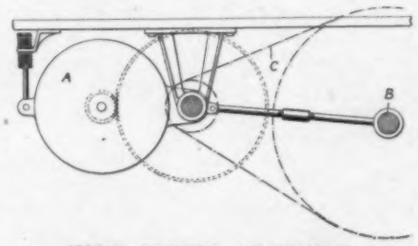
Ten-mile time trial.—Barney Oldfield, in "Bullet II." Time, 12:19 2-5.

Fifteen-mile time trial.—Barney Oldfield, in "Bullet II." Time, 17:23.

Patents

Driving Mechanism.

No. 740,656.—F. D. Howe, of Bayside, N. Y.

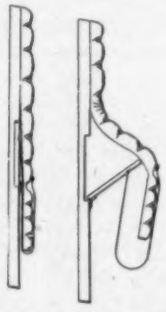


HOWE DRIVING MECHANISM.

The arrangement of electric motor *A*, pinion and gear drive, axle *B*, distance rod and sprocket chain *C*, clearly shown in the cut.

Tonneau Door and Seat.

No. 740,396.—L. S. Chadwick, of Ridley Park, Pa.

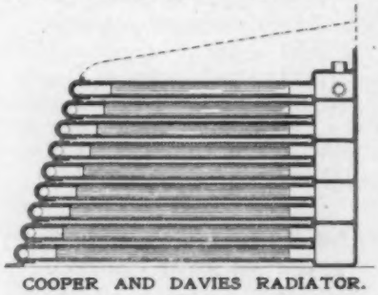


CHADWICK DOOR AND SEAT.

The door is shown in edgewise view in the cut. The seat folds up when out of use, and is covered by the hanging cushion. When the seat is down, the cushion covers the back and seat. The arrangement evidently lacks a crosswise strap to hold the cushion snug when the seat is down.

Cooling System.

No. 739,293.—E. L. Cooper and D. T. Davies, of Birmingham, England.

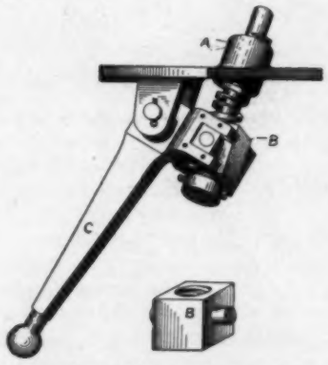


COOPER AND DAVIES RADIATOR.

Instead of flanged metal tubes, the radiator is made up of sections of canvas hose, arranged in suitable order for gravity circulation, and cooling is accomplished by virtue of slow evaporation of the water from the surface of the slightly porous hose. In the drawings, this hose is represented as walling in the motor space in front and on both sides, which would make the motor very inconvenient of access. As the amount of heat absorbed by the evaporation of a given quantity of water is the same whether the water boils or evaporates at normal temperatures, it follows that the proposition amounts in the end to the same thing as letting the water boil.

Steering Device.

No. 741,117.—A. R. Demory, of Toledo, Ohio.

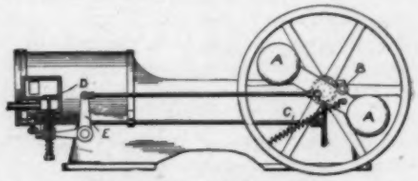


DEMORY STEERING DEVICE.

The shaft at the base of the steering column has two screw threads cut on it, one right-handed and the other left-handed. One of these threads in the socket *A* and the other in the nut *B*, the purpose being to double the movement of the lever *C* for a given turn of the hand wheel.

Rites' Governor on Gas Engines.

Nos. 741,164 to 741,166.—F. M. Rites, of Ithaca, N. Y.



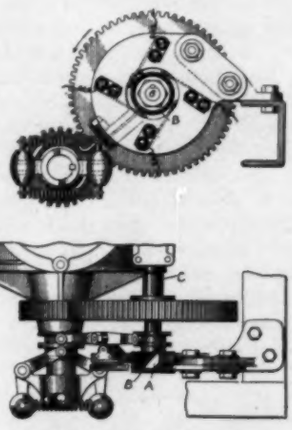
THE RITES VALVE GEAR.

Although primarily intended for stationary engines, this application of the well-known Rites inertia governor to gas engines will be of interest. The two connected weights *A*, shown of exaggerated size, are pivoted at *B*. Their center of gravity is in the axis of the shaft in the drawing, but under the influence of centrifugal force they tend to rotate slightly, stretching spring *C*. Increased engine speed increases this angular deflection, and, owing to the intertia of the heavy weights, a sudden increase in engine speed, if the shaft is turning "over" as usual, will momentarily increase it a good deal, while a reduction in speed will diminish it by allowing the weights to overtake the flywheel, so to say. To apply this mechanism to the gas engine, the inlet valve *D*,

which is opened by suction, is closed by bellcrank *E*, acting on the valve through a spring. The time of this closing—early or late—is determined by the governor. Other devices shown in the patents provide for mechanical opening as well as closing of the valve, and for operating the spark timing by the same apparatus.

Automatic Spark Lead.

No. 741,365.—J. W. Packard, of Warren, Ohio.



THE PACKARD IGNITER.

This is a development from the spark advance mechanism of the single-cylinder Packard cars, and is designed for use on multicylinder machines. *A* is the metal contact segment in the insulating ring *B*. It is splined on the 2 to 1 shaft *C* and is shifted by the expansion of the governor shown. The moment of contact of the brushes is varied by reason of the angular form of *A*.

Body Design.

Nos. 740,896 and 740,897.—J. H. MacAlman, of Somerville, Mass.

Two "Locomobile" body designs with the folding front seat covering the tank.

A. C. Bliss of Cleveland, O., has asked for permission to drive his electric runabout through the new water main running from the city out to waterworks crib No. 3 in Lake Erie before the big tunnel is closed up preparatory to turning in the water. A similar undertaking was accomplished in Brooklyn early in the season, when a party of city officials were hauled on an inspection tour through a monster new sewer.

All the personal property and business of the American Cycle Manufacturing Company were sold and transferred on October 14 to the Pope Manufacturing Company. Accordingly, all branches of the company were notified to transact business thereafter in the name of the Pope Manufacturing Company. Thus ends the "American Bicycle Trust" by returning penitently to the father of the American bicycle industry.

New Milwaukee Retail Auto Establishment.

One of the largest and best equipped automobile retail establishments in milwaukee, Wis., is the new one recently opened at 321 to 325 Fourth Street, at the corner of Prairie Street, by Orlando T. Weber & Co. The building is located just four blocks north of Grand Avenue, the main street of the city, on the west side of the river.

The lower floor is used as a showroom, with office in the rear. The second floor contains the repair shop, and has storage room for the second-hand cars. The third floor is used as a wash room, and for storage purposes. The entrance to the office is at the side, as is also the main entrance for automobiles, which lead direct to the elevator and the rear part of the showroom. Weber & Co. have the agencies for the Toledo, Ford, Clarksmobile gasoline cars and the Waverley electrics. They also recently secured the Chicago agency for the Toledo, and have arranged for quarters temporarily with the Dan Canary Automobile Co. at 521 to 531 Wabash Avenue, corner of Harmon Court.

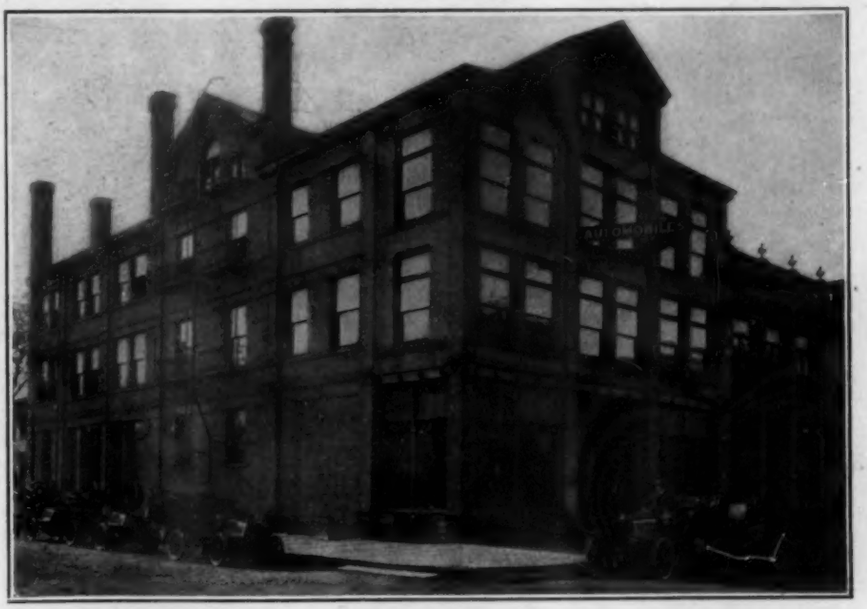
Built for Wild Mountain Roads.

In the accompanying engraving we show a neat little car built by F. O. Browne, a Denver, Colo., dealer. The engine of this car, which Mr. Browne states will develop 14 horsepower, is under the front seat, giving a very short chain drive. It is geared 4 1-2 to 1, and 922 revolutions give a speed of twenty miles. The builder claims the engine can be speeded up to 1,200 revolutions with the wagon on a good road. The transmission gear gives two speeds ahead and reverse. The car, weighing, as it does, about 1,400 pounds with all on, will develop one horsepower per hundred pounds of gross weight, and Mr. Browne says he finds no need for an intermediate speed. Throttle and spark controls are on the steering bar, and steering is by worm gear. The tanks are under the hood in front and have capacity for six-

F. O. BROWNE'S HUNTING CAR.

teen gallons of gasoline and twelve gallons of water, which gives the wagon a radius, on average roads, of about 300 miles. The wheels are shod with 34-inch by 3-inch clincher tires, and for practical use over the Colorado roads the car has proved serviceable and comfortable. It was built with the object in view of covering long runs over the deserted and unimproved roads that lead to the big game country in the Colorado wilds, and should, therefore, be well adapted to the requirements of the cross-country tourist.

The Infanta Maria Mercedes, sister of King Alfonso of Spain, sustained concussion of the brain by being thrown out of an automobile in Munich, Bavaria, on Friday, October 9.



A. T. WEBER & CO.'S RETAIL ESTABLISHMENT IN MILWAUKEE

News Notes and Trade Items.

Butte, Mont., has adopted an ordinance regulating the speed of automobiles, bicycles and horses.

The Jackson Motor Carriage Company, Jackson, Mich., has been incorporated with $30,000 capital stock.

The speed of automobiles in Reading, O., has been limited to six miles an hour by special act of the Village Council.

An automobile race for an expensive silver trophy was a feature of the racing program at the Idaho Intermountain Fair at Boise, Idaho, recently.

Orin Nash, of Poseyville, Ind., has applied for a patent on an automobile self-binding harvester which he thinks he can make to sell for about $400.

Adolph A. Geisel of Springfield, Mass., has taken the local agency for the electric automobile trucks manufactured by the Vehicle Equipment Company of Brooklyn, N. Y.

Charles J. Chabot, 309 Navarro Street, San Antonio, Texas, desires correspondence with manufacturers of runabout automobiles relative to the placing of an agency in his city.

Eleven automobile drivers were recently discharged from the employ of the Boston Auto Express Company, Boston, Mass., for wearing the button of the Boston Team Drivers' Union.

Bournemouth, England, has an automobile sprinkling wagon which carries four tons of water and climbs the hills thereabouts successfully, though it required six horses to haul the former sprinkling wagon.

A bank in Brussels, Belgium, employs an automobile of the light delivery wagon type for collecting purposes. The car has a closed-in top and the only means of entering it is through the front, directly past the driver.

The Erie Auto-Coach Company, Erie, Pa., has been incorporated with a capital stock of $25,000. The directors are Walter Scott, H. N. Thayer, Geo. J. Schaal, Jacob Roth, Cassius McCreary, John M. Miller and Henry A. Clark, all of Erie.

The estate of J. Frank Shearer, who was killed in September at the Grosse Pointe track, in Detroit, by Barney Oldfield's racing car, has entered a claim for $20,000 damages against Oldfield's employer, the Winton Motor Carriage Company.

The Suffolk County, L. I., supervisors have authorized the district attorney to offer a reward of $10 for the conviction of persons found guilty of violating the Bailey law. At one time the county paid a bonus of $50 and later it was reduced to $25.

The Richmond-Jarvis-Caro Co. has been organized in Grand Rapids, Mich., to sell automobiles, safes and typewriters. The capital stock is $50,000. A suitable building will be erected in the business district of the city, and Rambler automobiles will be the company's leading line.

The Licensed Association of Automobile Manufacturers announced on October 6 that three importers of foreign cars were admitted to membership at the last meeting of the association. The new members are the Central Automobile Company, E. B. Gallaher and Alexander Fischer, all of New York City.

E. Leroy Pelletier, president of the Du Quesne Motor Car Company, and J. H. Betts, president of the Queen City Automobile Exchange, Buffalo, have organized the Auto Roundhouse Company, and leased the Buffalo Cyclorama Building, where they will conduct one of the largest automobile garages in the country.

Many New Yorkers will be interested in the announcement that the Apperson Bros. Automobile Co. is shortly to open a branch store in New York City, of which Mr. George B. Adams will be the manager. The building selected for the store cannot be occupied until, November 1, but temporary quarters will probably be secured until that time.

It is proposed to consolidate the Kirk Manufacturing Company, the Snell Cycle Fittings Company and the Toledo Manufacturing Company, all of Toledo, O., under the style of Toledo Consolidated Manufacturing Company. Practically the same people are interested in the three concerns. The capital stock will be increased in the event of consolidation.

The Morlock Automobile Manufacturing Company at 68 Chandler Street, Buffalo, has been closed by the Sheriff. The factory and its contents have been seized under five executions amounting, with costs, to about $700. Notices have been posted for a sale to be held in the near future. The Morlock Company is trying to settle its affairs in order to avoid a sale.

The October number of *Graphite*, published by the Jos. Dixon Crucible Company, contains a description of a graphite lubricator made by F. Hiorth of Christiania, Norway. It is a mechanical lubricator, feeding oil and graphite mixed, and its special feature is the use of a revolving stirrer at the bottom, to commingle the graphite and oil as they are fed. To accomplish this properly, has generally been the most difficult problem in graphite lubrication.

We have been requested by Charles J. Chabot of San Antonio, Texas., to correct the statement made in these columns in our issue of October 10 that he had formed a partnership with Messrs. Staacke Bros., of the same city, and that the firm controlled the local agencies for Thomas, Rambler, Oldsmobile, Haynes-Apperson and Toledo cars. He states that he made an agreement with Staacke Bros. to handle the Thomas cars, but nothing more. Staacke Bros., he says, are agents for the Rambler and the Cadillac, while Crothers & Birdsong are the San Antonio agents for the Oldsmobile.

The Toledo Storage Battery and Electric Co. was incorporated in Toledo, Ohio, recently, with the object of manufacturing the Miller storage battery, and also for the purpose of manufacturing, buying and selling all classes of electric supplies. Special claims are made for the new battery, including lightness, greater efficiency and durability and increased saving in space. The officers of the company are: President, Mark H. Griffin; vice-president, L. A. Alexander; treasurer, J. Tyler Greene; secretary, Chas. R. Clapp. The board of directors includes the officers named and Geo. J. Miller, who is also general manager of the company.

City officials and motorists of Buffalo are greatly interested and somewhat puzzled over a claim recently filed by Attorney Carl H. Smith to recover $4 damages to his automobile owing to defective pavement. Mr. Smith was recently riding in his automobile over Baynes Street and near Auburn Avenue, where the original asphalt pavement is badly worn and cut up, making a number of ugly holes, an automatic spring on Mr. Smith's machine broke, causing the driver considerable delay before repairs could be made. They amounted to $4. He claims he was driving at a moderate gait and that the pavement was responsible for the break.

A notable transaction in the trade in California last week was the transfer to the Mobile Carriage Company of San Francisco of the business of the Mobile Company of America on the Coast. Over a year ago the Mobile Carriage Company of California placed several large Mobiles in the passenger automobile service in the city, and the business has proved so successful that recently the concern decided to go into all branches of the automobile business, and while it will continue to operate the Mobile passenger cars and sell the Mobile steamers, a large line of gasoline cars will be added. The passenger service will be extended also by the use of gasoline cars. Frank E. Hartigan, who built up the business for the Mobile Co. of America in California, will be manager for the Mobile Carriage Co. The directors are; J. Alfred Marsh, Livingston Jenks, John Rush Baird, H. C. Tilden and T. C. Richardson. Charles D. McKee, a well-known Chicago expert, has entered the service of the company as superintendent of the gasoline department, while Harry Chambers, also of Chicago and an experienced garage man, will have charge of the company's garage.